U. S. DEPARTMENT OF AGRICULTURE.

FARMERS' BULLETIN No. 64.

DUCKS AND GEESE:

STANDARD BREEDS AND MANAGEMENT.

BY

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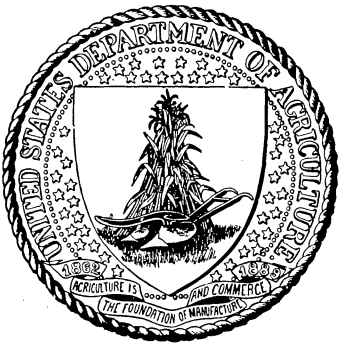
Secretary of National Poultry and Pigeon Association.



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U. S. DEPARTMENT OF AGRICULTURE,
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Washington, D. C., September 24, 1897.

SIR: I have the honor to transmit herewith, for publication as a Farmers' Bulletin, an article on Ducks and Geese, prepared by Mr George E. Howard, secretary of the National Poultry and Pigeon Association. It comprises an enumeration of the standard breeds of ducks and geese, and contains suggestions for their management. The practical information contained in this bulletin will undoubtedly prove of value to persons engaged in raising ducks and geese, and its publication and widespread distribution are respectfully recommended. The illustrations were drawn by the author from original sketches and photographs, with the exception of three of the cross-bred geese, which are after the illustrations published by the Rhode Island Experiment Station, and the wild goose, which is after the illustration in Wright's Book of Poultry. The author has received generous assistance in treating of the practical details from James Rankin, A. J. Hallock, George H. Pollard, and others who are largely engaged in the raising of water fowls for market.

Respectfully,

D. E. SALMON, *Chief of Bureau.*

Hon. JAMES WILSON, *Secretary.*

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DUCKS AND GEESE.

DUCKS.

STANDARD BREEDS OF DUCKS.

Introduction.—There are ten standard breeds of ducks raised in this country, as follows: The White Pekin, White Aylesbury, Colored Rouen, Black Cayuga, Colored Muscovy, White Muscovy, Gray Call,

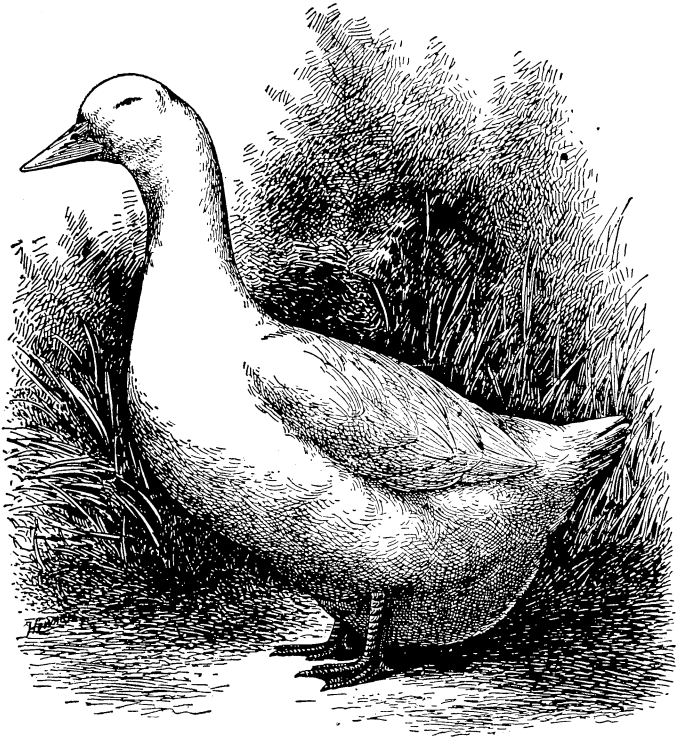

FIG. 1.—White Pekin duck.

White Call, Black East Indian, and the Crested White. Of these breeds, the first six are considered profitable to raise; the two breeds of Calls and the Black East Indian are bantams, and are bred more for the showroom; the Crested White may be considered as almost purely ornamental.

WHITE PEKIN DUCKS.

History.—Of all ducks for farm and practical purposes none stand higher in popular esteem than the White Pekin (fig. 1). It is valuable for raising on a large scale, and is the most easily raised of any. It is a very timid bird and must be handled quite carefully. It was

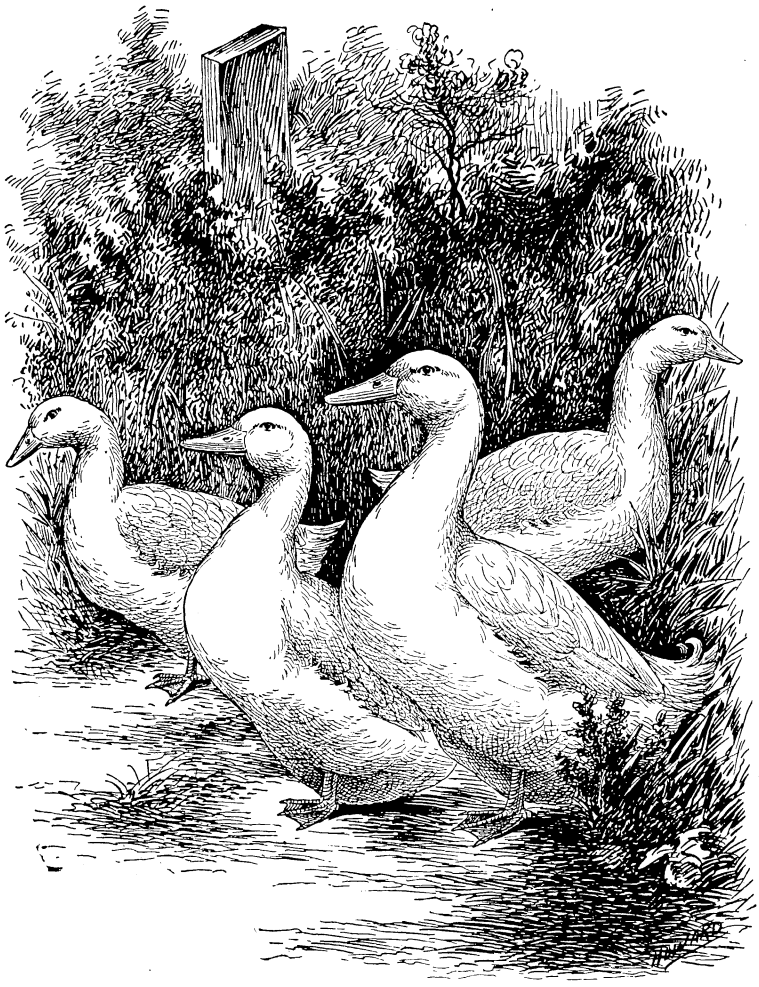

FIG. 2.—Group of White Pekin ducks.

imported from China in the early seventies, and has steadily grown in popularity since its introduction into this country.

Description.—The Pekin duck has a distinct type of its own, and differs from all others in the shape and carriage of its body. By some it is credited with having a shape much like an Indian canoe, owing to the full growth of feathers under the rump and the singular turned-up carriage of the tail. The legs are set far back, which causes the bird

to walk in an upright position. In size these ducks are very large, some reaching as high as 20 pounds to the pair. Their flesh is very delicate and free from grossness, and they are considered among the best of table fowls. They are excellent layers, averaging from 100 to 130 eggs each in a season. They are nonsetters, hardy, easily raised, and the earliest in maturing of any ducks. The method given in this bulletin for raising ducks is based on the Pekin as a standard, and the treatment, food, housing, etc., is given as used by the largest and most successful raisers of Pekins. Other ducks are judged for practical qualities by the Pekin. Fig. 2 shows a group of White Pekin ducks.

The standard-bred Pekin has a long finely formed head, a bill of medium size, of a deep yellow color, that is perfectly free from any mark or color other than yellow. The color of the bill is very important for exhibition birds, and it is not infrequent that one of the best ducks in a showroom is disqualified for having a faint tracing of black in the bill. The eyes are of deep leaden-blue color. The neck of a Pekin should be neatly curved; in the drake it should be large and rather long, while that of the duck is of medium length. The back is long and broad; breast is round, full, and very prominent. The body is long and deep, and the standard gives for adult birds a body approaching the outlines of a parallelogram. The wings are short, carried closely and smoothly against the body. The birds can not sustain flight, a 2-foot fencing being ample to restrain them in an inclosure. The tail is erect, more so than in any other specimen. The curled feathers in the tail of the drake are hard and stiff. The thighs are short and large; shanks short and strong, and in color are a reddish orange; toes straight, connected by a web, and reddish orange in color. The plumage is downy, and of a faint creamy white throughout. Recently it has been noticed that preference in the showroom is being given to birds of whiter plumage. The breeders are selecting as their show birds those that have the snow-white plumage instead of the creamy white, as given in the standard.

Weight.—The standard weight of the adult drake is 8 pounds; adult duck, 7 pounds; young drake, 7 pounds, and young duck, 6 pounds.

WHITE AYLESBURY DUCKS.

History.—The White Aylesbury ducks (fig. 3.) are second to the popular Pekins for market purposes, and are bred in large numbers in England and Europe. In this country they are not so extensively bred as the Pekin, neither have they been found so good as the latter. These ducks receive their name from Aylesbury, the county town of Buckinghamshire, England. They are of large size, pairs occasionally reaching the weight of 18 pounds, the male birds weighing 9 or 10 pounds, and the female 7 or 8. Birds weighing 15 to 16 pounds to the pair are the average.

Description.—The head of the Aylesbury duck is long and neatly

formed; the eyes of a deep leaden-blue color; the long, wide bill is of a pale flesh color or pinkish hue, and should be free from dark spots, bills marked with black being a disqualification; the neck is slender, long, and gracefully curved; the body is long and oval; the breast is full and round; the strong shanks are of brilliant light-orange color; the wings are strong and nicely folded; the back is both long and broad, and the tail formed of stiff, hard feathers.

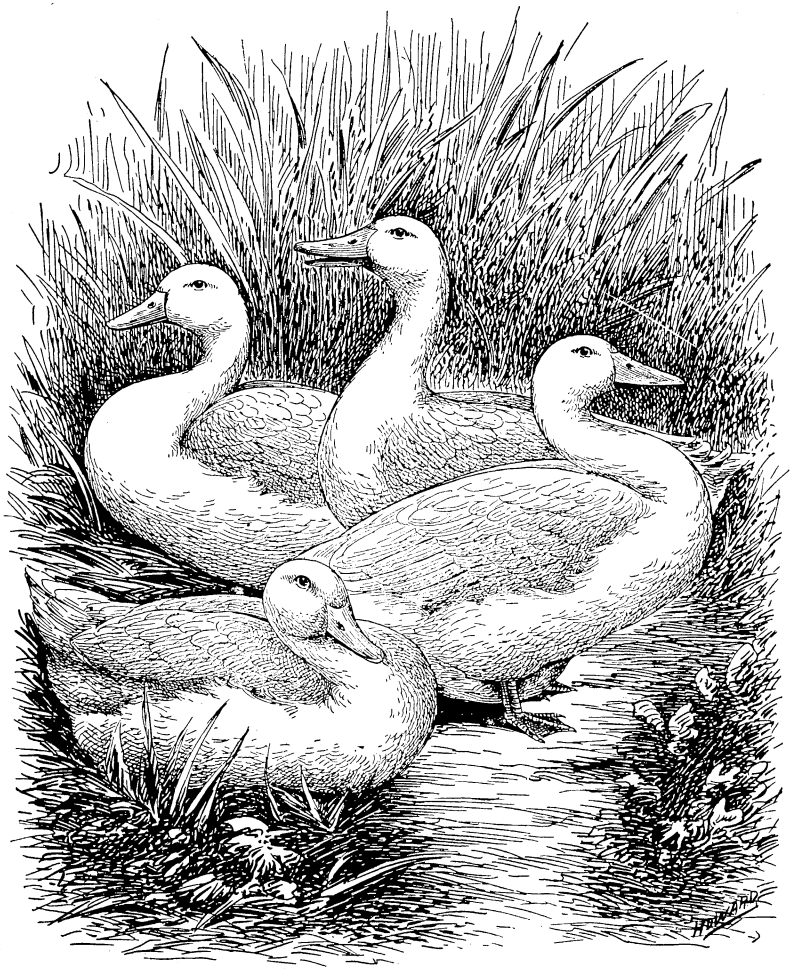

FIG. 3.—Group of White Aylesbury ducks.

The soft white plumage is one of the chief attractions of the Aylesbury breed, and like most white plumage has a tendency to assume a yellow hue if exposed to the sun. The beak will also lose its delicate pink hue and become yellow if exposed to too much sunlight in summer. The bill of the Pekin should be yellow, but the bill of the Aylesbury should be a delicate pink or flesh color, and birds intended for exhibi-

tion must possess this quality or they will suffer at the hands of the judge. Birds raised for exhibition purposes must be guarded against too much exposure to the sunlight in the summer. Of course, these delicate points are of no consequence to the market poulterer other than to show the true type of the breed.

For farm purposes the Aylesbury is to be recommended, second only to the Pekin; it possesses the many good qualities of the Pekin, and can be bred with almost the same success. The advantages claimed for Aylesbury are the ease with which it is acclimated, thriving in every country and climate; its early maturity; its great hardiness; its large size; its great prolificacy, and the real beauty which it possesses. Raisers recommend for raising exhibition birds one drake to two ducks, or two drakes to five ducks, all being allowed to run together. Duck raisers who raise large numbers for market breed them as they do Pekins, using from four to eight females to one male, according to the season of the year. Fresh blood is introduced every year to keep up the size, and breeding stock is seldom kept longer than the second or third year.

The Aylesbury being an English duck, it will be of interest to note the methods employed in their native place for raising them, as given by an English writer in the following statements:

In and about the town of Aylesbury very many of the cottagers maintain, each of them, a set of ducks, about 4 ducks to a drake. These they keep in any outbuilding attached to their dwellings and, failing such a place, in the cottage itself.

From them the "duckers" (dealers peculiar to the trade) collect the eggs, and generally bargain with the owners for their whole supply at a given rate for the season. They begin their collection in October, and the contract is often made for the whole produce up to June. The breeding stock of a "ducker" who does an average trade consists of six drakes and twenty ducks; these all run together, and the brooks and ponds are looked upon almost as common property. They are separated at night, driven up to their respective homes, well fed and warmly housed. The eggs which were laid during the nighttime are set, as soon as possible, under large and attentive hens, for which purpose good Dorkings and Cochins are considered best. The ducks themselves are never allowed to sit, though they may desire to do so, as the result would be almost certain failure.

Thirteen eggs comprise a setting, and these are easily covered by a large hen. Hens are set either in fish pads, small hampers, or, in what we have found most serviceable, the round boxes in which cheeses are packed. In the bottom of these is placed some lime or wood ashes, and then a nest of hay or some soft straw; there the hens must be kept as quiet as possible. Special care must be taken to guard against the intrusion of rats or other vermin by which the hen mother may be disturbed and, as is often the case, the whole setting be destroyed thereby. The period of incubation is twenty-eight days, and during the last week of that time care must be taken to sprinkle the eggs daily with lukewarm water, which softens the shells, so that when the time comes for the duckling to make its appearance it has not much difficulty in breaking through its covering. When the young are hatched they should be left with the hen until well nestled, well dried, and strong enough to stand. Many scores of ducklings are lost by inexperienced persons through their impatience to remove them from the nest. The little duckling is at first clad with soft, yellow down, which gradually disappears as the feathers grow. After a few days, three or four broods are put together with one hen, which is quite able to take care of them all.

For market purposes the treatment of the ducklings is as follows: They are not allowed to go into any water, but are kept in hovels or the rooms of cottages, each lot of thirty or forty separated by low boards. It is no uncommon thing to see 2,000 or 3,000, all in one establishment. They are kept very clean and dry on barley straw; their food consists of hard-boiled eggs, chopped fine and mixed with boiled rice and bullock's liver, cut up small. This is given to them several times in the day for about a fortnight or more. When they are capable of consuming more they are fed on barley meal and tallow greaves (cracklings), mixed together with the water in which the greaves previously have been boiled. Some poultrymen also use horseflesh to mix with their other food. The above constitutes all that is necessary to produce early ducklings for the table.

In plumage the Aylesburys are a pure, spotless white, and feathers of any other color will disqualify them. Drake and duck vary only in the ordinary respect of the male bird, showing a very handsome curled feather in the tail and being of a larger size than his mate.

Weight.—The standard weight of the adult drake is 9 pounds; adult duck, 8 pounds; young drake, 8 pounds, and young duck, 7 pounds.

COLORED ROUEN DUCKS.

History.—The Colored Rouen duck (fig. 4) is deservedly popular throughout this country, and is considered one of the most profitable breeds to keep. These ducks are said to have come originally from the city of Rouen, in Normandy. It is known that large quantities of poultry are raised in Normandy, and while there may be no positive proof that these ducks came originally from that city, large numbers of birds closely resembling them are to be found in the market places there. Some writers contend that the name should be "Roan," owing to their color, but the color itself does not support this contention. The correct name is Rouen, and "Roan" is undoubtedly a corruption.

Description.—The Rouen duck is a fine market bird, but does not mature as early as does the Pekin or the Aylesbury. The flesh is considered very delicate, and the breed is acknowledged to be superior for table purposes, being easily fattened. The Rouen will be found a profitable bird to raise on the farm, being hardy, prolific, quiet in disposition, and of beautiful plumage. Their eggs are not as large as those of the Pekin, and are diverse in color.

The Rouen is undoubtedly closely related to the Mallard duck; its plumage alone would make good this belief. But the shape of the domestic Rouen duck has been greatly modified from that of the wild Mallard; the body is grown longer and heavier, with a tendency to drop down in the rear; the wings have lost the power of flight which the wild ancestor possessed. The plumage, however, remains almost the same.

The standard-bred Rouen drake has a long, finely-formed head, with rich, lustrous green plumage; bill long and broad, wider at the extremity, of greenish-yellow color, with a black bead at the tip; the neck is long, slender, and neatly curved, covered with the same lustrous green plumage as the head, which is interrupted by a distinct white

ring, not quite complete behind, on the lower part of neck. The back is long, the upper part being ashy gray, mixed with green, and running into a rich, lustrous green on the lower part and rump; the shoulder coverts are gray, striped with fine, wavy lines of brown. The breast is broad and deep and purplish brown or claret color, perfectly free from gray feathers; the claret color should extend down as far as possible toward the legs. The body is long, deep, and broad, the under part

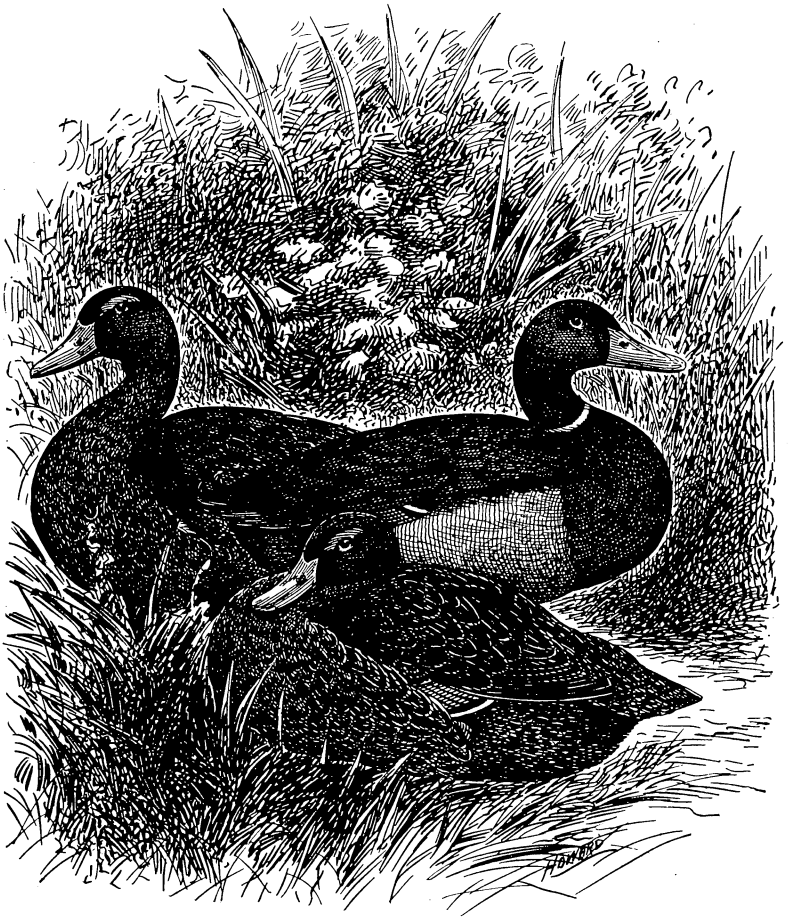

FIG. 4.—Trio of Colored Rouen ducks.

and sides being a beautiful gray, which grows lighter near the vent, ending in solid black just beneath the tail. The wings are short and carried closely and smoothly against the sides; in color the wings are of a brownish gray, interspersed with green, and marked with a band of rich purple, with metallic reflections of green and blue lights, and edged with distinct white bands; the primary feathers are of a dark, dusky brown. The tail feathers are hard and stiff, and of a dark ashy-brown color; the outer edge in old birds is edged with white; the curled

feathers are well curled and hard. The thighs are short and stout and of ashy-gray plumage; the shanks are short and strong, and in color orange with brownish tinge; the toes and webs are of the same color as the shanks.

The head of the Rouen duck, like that of the drake, is long and finely formed, but with a deep-brown plumage and two stripes of lighter brown extending from the beak to behind the eyes; bill, long, broad, and somewhat flat, brownish orange in color, blotched with darker shade upon the upper part and ending in a black beam at the tip. The neck is neatly curved, long and slender, light brown in plumage, penciled with a darker shade of the same color; unlike the drake, there is no white ring on the neck. The back is long, of a light-brown color richly marked with green; breast, full and round and of dark-brown plumage, penciled with lighter brown; body, long, deep, and broad, the under part and sides of plumage being grayish brown, each feather penciled with rich dark brown to the point of the tail. The wings are short for the size of the bird and are carried closely against the sides; the color of the plumage is grayish brown, intermingled with green, with bars of purple edged with white, the colors being distinct; primaries are brown. The tail feathers are stiff and of a light-brown color, distinctly marked with pencilings of dark greenish brown; tail coverts are brown, penciled with the same dark brown, or greenish brown, as the tail. The thighs are dark brown, penciled; and shanks, toes, and webs are orange or orange brown.

Both the Rouen drake and duck, clothed in plumage attractive and pleasing to the eye, are as much fanciers' fowls as any of the varieties of chickens, yet they are of much value as market birds. The only objection to them, aside from their slow maturing qualities, is that of the dark pinfeathers. This should not stand against them any more than it does against the many valuable varieties of chickens that have dark plumage and dark pinfeathers. To the farmer who intends raising ducks for market purposes they are to be recommended.

Weight.—The standard weight of the adult drake is 9 pounds; adult duck, 8 pounds; young drake, 8 pounds, and young duck, 7 pounds.

BLACK CAYUGA DUCKS.

History.—The black Cayuga (fig. 5) is distinctly an American duck, having been bred so long in this country that all trace of its origin is lost. It is said that it was first found in the central part of New York, on Cayuga Lake. It was sometimes called the "Big Black duck," and again the "Lake duck," but is now known only as the Black Cayuga duck. By some it is supposed to have originally come from the wild Black duck, and another story has it that it was first found in Dutchess County, in the State of New York, where a miller was raising a flock of thirty, which, he said, were bred from a pair he had captured several years previous in a mill pond. They were kept in the poultry yard,

easily tamed, and built their nests on the edges of the pond and raised large broods. For many years the Cayuga has been raised in this country and has been considered by those who have bred it to be a profitable duck to keep.

Description.—By some raisers the Cayuga is considered to be as good as the Pekin for early markets, and the claim is made that it can be grown as cheaply. This assertion is not verified by any practical demonstration, as these ducks are rarely, if ever, seen on any farm

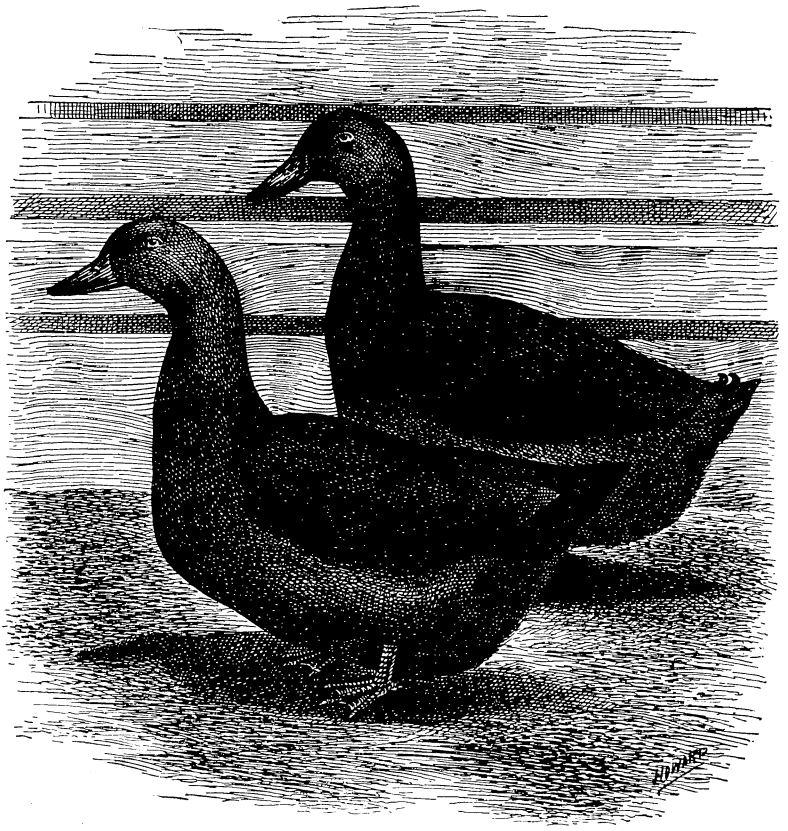

FIG. 5.—Pair of Black Cayuga ducks.

where ducks are raised exclusively. Though raisers generally speak of their merits as making them profitable, and place them next to the Pekin for early markets, they prefer the latter for exclusive duck raising where early maturity and plump carcasses are wanted. Their black plumage is against them also, and many assign this as the reason why they are not more extensively bred. The farmer who desires a good, practical duck to raise on his farm in conjunction with other poultry will find this a valuable bird to keep. More time can be spent in dressing it for market than is generally given to the dressing of the white-

plumage birds, and the profits will be proportionately as great. Duck raisers, like broiler raisers, are partial to white feathers for market fowls, but those who do not look with this partiality on the white varieties will find an excellent choice in the Cayuga duck.

Cayugas are splendid birds for a restricted range and breed well in confinement; they are quiet, docile, and form a strong attachment for their home, evincing no inclination or desire to stray far away from the place where they were bred. They are hardy and prolific, producing from 80 to 90 eggs in the spring, and sometimes they also lay again in the autumn. They are easily kept in good condition, but if fed too liberally they will fatten too quickly and will become too heavy behind. The ducklings are hardy and easy to raise, and attain good size and weight at an early age.

The head of the Cayuga is small, with glossy black plumage; bill rather short and broad, of dark color, black being preferred; the eyes dark hazel. The neck is medium, gracefully curved, clad in black feathers with a greenish luster; the back is broad, and the body long, well rounded, and very plump, the feathers being of a glossy black hue. The wings are long and are carried smoothly against the body, and are black in color, excepting those of the duck, which are sometimes of a dark brown. The coverts of the drake are a very lustrous green black; the tail feathers are black, as are the thighs. Black shanks, toes, and webs are preferred, though dark slate color is permissible according to the standard requirements. The color of the plumage must be lustrous black throughout, and feathers of any other color will disqualify a bird in the showroom.

Weight.—The standard weight of the adult drake is 8 pounds; adult duck, 7 pounds; young drake, 7 pounds, and young duck, 6 pounds.

COLORED AND WHITE MUSCOVY DUCKS.

History.—Muscovy ducks (fig. 6) form a distinct genus, having several peculiarities or characteristics which make them different from others. They are sometimes called the Musk duck, owing to the odor of musk which pervades the skin, but which is not noticeable when cooked. These ducks are found wild in the warmer regions of South America. In Brazil they are extensively domesticated and are prized very highly for eating. In this country and Europe, particularly in Germany, they are bred in large numbers. Wild Muscovies are easily frightened and very good flyers; they fly into trees when alarmed and remain there for long periods of time before leaving their place of concealment. They sometimes build their nests in branches of trees, and also in hollows near water.

Description.—Muscovy ducks are very unsatisfactory birds to keep on the farm with other poultry, owing to their quarrelsome and pugnacious natures. In the wild state, before pairing, the males fight desperately, doing great harm to each other; and this fighting, quarrelsome dispo-

sition is inherited by the domestic duck. The temper of the drake is spoken of as abominable; his persecution of other poultry is never ceasing, and he is credited with having attacked even children when his "dander was up." The flesh of the Muscovy is considered very good when eaten young, and compares favorably with that of any other duck. They do not lay nearly so many eggs as the common kinds. When bred they must be kept in yards by themselves, and their wings must be clipped to keep them from flying.

The head of the Muscovy duck is rather long, and in the drake it is large, the top being covered with long crest-like feathers, which rise and fall when the bird is alarmed. The bill is of medium length and very stout. The face is the most distinctive part of these ducks, the

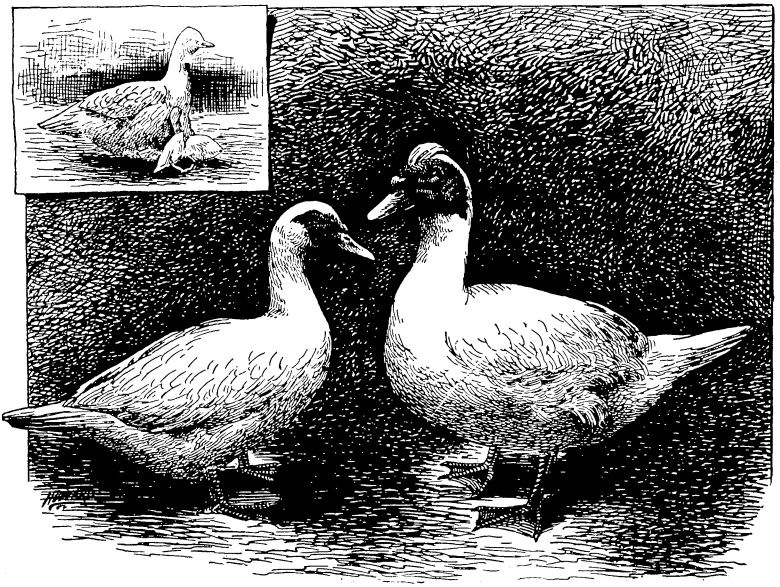

FIG. 6.—Pair of White Muscovy ducks.

cheeks being naked, with a scarlet, fleshy space around the eyes, and the base of the bill carunculated also with scarlet folds. This large, red face gives them a savage appearance, and to some it is hideous. The neck is well curved and of medium length; back broad and flat, breast full and broad, and body long and broad. The wings are very long and stout, and the tail is rather long, with abundance of stiff feathering. The drake does not have the curled feathers in the tail, as do other ducks.

There are two varieties of Muscovy ducks, the colored and the white. The head of the Colored Muscovy is glossy black and white; the bill is dark horn in color; eyes, brown; the back in color of plumage is lustrous blue black, which is sometimes broken with white; the color of

the breast and body is the same as that of the back. The wing coverts are rich, lustrous green black, and the tail feathers may be either black or white, the latter being preferred. The thighs, like the tail feathers, may be either black or white, white being preferred; the shanks, toes, and webs vary in color from yellow to dark lead or black. The White Muscovy in color of plumage is pure white throughout; feathers of any other color will disqualify the bird for show purposes. The eyes in the white variety are of a leaden-blue or gray color, while those of the colored are brown. The shanks, toes, and webs are of a pale-orange or yellow color.

Weight.—The standard weight of the adult drake is 10 pounds; adult duck, 8 pounds; young drake, 8 pounds, and young duck, 7 pounds.

GRAY AND WHITE CALL DUCKS.

History.—Call ducks are bantams, and are bred more for the fancy than for the profit there is in them for market. There are two kinds of Call ducks, the Gray Call and the White Call (fig. 7), and it is only a choice of plumage as to which is the better of the two. They are both of one character as to size, shape, and habits, and differ only as regards color. The Gray Call is very similar in color of plumage to the Rouen, and is indeed called by many the Bantam Rouen, and the White is generally called the Bantam Pekin. Their uses are only for the showroom, or as decoy ducks for wild-duck shooting. For the latter purpose they are sometimes crossed with the common "puddle duck" or with the wild Mallard. This latter cross is considered excellent, the progeny being distinguished for tameness and domesticity.

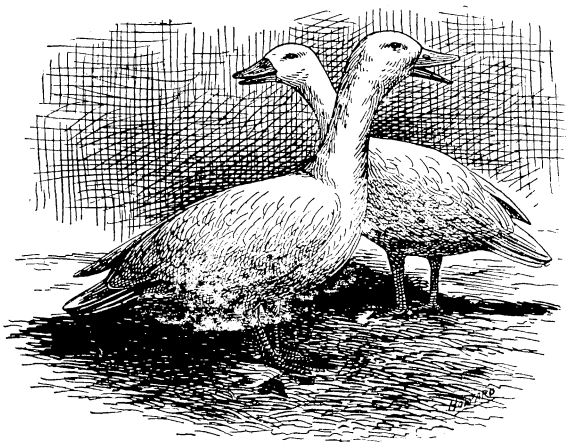

FIG. 7.—Pair of White Call ducks.

Description.—When breeding Call ducks, smallness of size is the first consideration; the smaller they are bred the better. The arts of skillful breeding for the showroom are being used in keeping down the size of these ducks. Inbreeding has been resorted to, while late hatching, scanty feeding, and nonbone-making food have been the means that have retarded their natural development.

The head of the Call duck is full and round; bill, short and broad; neck of medium length, and back comparatively short; the breast is

round and full, and body short, round, and compact, with medium-sized wings; the thighs are short and stout, and shanks short.

The Gray Call drake is a beautiful little bird, with a rich, lustrous green head, dark-hazel or brown eyes, lustrous green neck, with a white ring on the lower part of neck, as in the Rouen. The back is of ashy-gray plumage mixed with green on the upper part, while the lower part and rump are a rich, lustrous green. The under part of the body on the sides is a beautiful gray, which grows lighter toward the vent, and ends in solid black under the tail. The wings are grayish brown, mixed with green, and have the broad ribbon-like mark of rich purple with metallic reflections of green and blue, distinctly edged with white. The primaries are a dark, dusky brown. The tail feathers are of a dark, ashy brown, the outer web in old birds being edged with white; the tail coverts are black, with very rich purple reflections. The bill is greenish yellow in color, while the shanks, toes, and webs are orange, with a brownish tinge.

The duck's head is deep brown, and has two pale-brown stripes on each side, like the head of the Rouen duck, running from the bill to a point behind the eyes. Her bill is of a brownish-orange color, and her eyes are dark hazel or brown. The neck is light brown, penciled with darker brown; breast, dark brown, penciled with lighter brown; back, light brown, marked with green, and the under parts and sides of body are grayish brown, each feather distinctly penciled with rich dark brown. The plumage of wing is grayish brown, mixed with green, and is crossed by a broad bar of rich purple edged with white; the primaries are brown. The tail feathers are of a light-brown color, with distinct, broad, wavy penciling of dark greenish brown; tail coverts are brown, with broad penciling of dark brown or greenish brown; thighs are dark brown; shanks, toes, and webs are orange brown.

The White Call is pure white in plumage throughout, and feathers of any other color will disqualify it. It is in every respect like the Gray Call except in plumage, in the color of the eyes, which are a gray or blue, and the color of the shanks, which are a bright orange.

Weight.—No standard weight is given for Call ducks.

BLACK EAST INDIAN DUCKS.

History.—Another standard breed of ducks which is hardly considered a rival of the Pekin, Aylesbury, Cayuga, or Rouen, is the Black East Indian. This duck bears the same relation to those just named as does the bantam to the larger varieties of chickens. The Black East Indian and the Call ducks are the bantam breeds of ducks, being bred more for their smallness of size than for their profitableness. The same devices are resorted to in breeding them as were mentioned for breeding the Call ducks.

Description.—The East Indian duck is hardy, and would, if carefully bred from the largest and best specimens, grow to a fairly good size,

and be profitable to keep. In weight they seldom grow larger than 2 to 2½ pounds each. The close inbreeding to which they have been subjected has been detrimental to their egg production, while those strains which have not been so closely bred have proved very prolific. It may be said in favor of these ducks, that if allowed to increase in size, which they will readily do under favorable circumstances, they would prove very profitable to those who prefer keeping small-sized birds to the larger ones.

The East Indian duck is very shy in its habits, and is given to long flights, but if attention is shown them in feeding they become attached to their home surroundings. They can not be successfully bred in confinement; their natures are roaming and they like freedom of life. The first eggs of a litter laid by these ducks are sooty or nearly black in color, but they gradually grow lighter until they assume the color common to the eggs of most varieties. They are splendid sitters, and will invariably steal their nests if permitted to do so, but the duck and brood when hatched should be confined for a couple of weeks, that the young may not be exposed until they have gained some strength and size.

The head of the black East Indian duck is short and small; eyes dark hazel; bill rather short. The head of the drake is of a dark yellowish green, free from all spots or blemishes, and the duck's head is very dark, almost black. The exact coloring of the bill of the drake is considered of the utmost importance. It is described by an enthusiast as being a sort of pale yellow, washed over with blackish green, the color being laid on thinly, as it were, so as to give an almost transparent effect, and shaded off at the tip into a kind of slate color. By another raiser the color of the bill is described as an olive green. The neck is neatly curved and short; back, of good length and medium width. The breast is full, round, and plump. The body is long and comparatively small; wings of medium length and nicely folded; tail short, and in the drake has the curled feathers. The thighs are short and stout, and shanks are short and rather small.

The plumage is a rich black, with a brilliant greenish tint throughout. The color of the plumage is of much worth to the beauty of these ducks; it must be intensely black, rich in greenish reflections, and perfectly free from white. The plumage upon the neck, back, and shoulder coverts will show more of the green than will the underparts, the coloring of the drake surpassing that of the duck.

It is seemingly a difficult matter to breed specimens of the required color of plumage; more especially is it so with the duck, whose plumage is likely to be of a brownish tint. These ducks are quite likely to show more or less white in plumage. The white feathers usually appear about the eyes and also upon the breast. Birds that have been free from white as ducklings have been known to molt almost pure white. The ducklings when first hatched are black, with a shade of yellow on the breast, and with jet-black feet, shanks, and bill.

When breeding these ducks use two females to one male, and the eggs will prove very fertile. The young will be very hardy after five or six weeks of age, and there should be no trouble in rearing them after that time. Give the youngsters free range and they will find nearly their whole living in grasses, insects, etc.

Weight.—There is no standard weight given for Black East Indians; the smaller their size the higher they rank for exhibition purposes.

CRESTED WHITE DUCKS.

History.—The Crested White duck (fig. 8) is what may be called an ornamental duck, much the same as Polish chickens. They are not bred to any great extent in this country, and they are very seldom seen

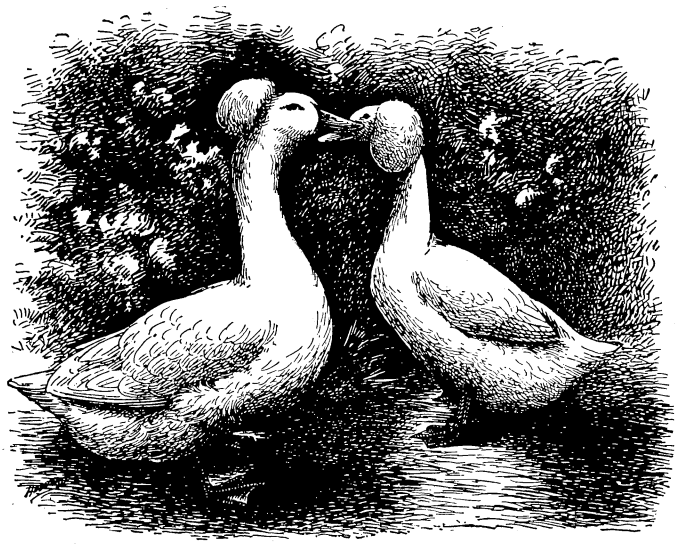

FIG. 8.—Pair of Crested White ducks.

in the showrooms. They have no especial value to the farmer, as better and more easily-bred birds are to be found in the Pekin and Aylesbury.

Description.—These ducks have a medium-sized head; medium-sized bill; a large, well-balanced crest upon the crown of the head; a rather long neck; a medium-length back; breast, round and full; body, round and of medium length; medium-length wings that smoothly fold; hard, stiff tail feathers, with well-curled feathers in the tail of drake; and short and stout thighs and shanks. Their eyes are large and bright and of a deep leaden blue or gray color. The shanks, toes, and webs are of a light-orange color.

Weight.—The standard weight of the adult drake is 7 pounds; adult duck, 6 pounds; young drake, 6 pounds, and young duck, 5 pounds.

MANAGEMENT OF DUCKS.

Duck raising has been developed within the last ten years into a flourishing industry. Prior to that time the duck was not considered a profitable fowl to raise; its flesh was never prized very highly by the masses. Ducks were raised without constraint in waterways, feeding mostly on fish and water insects. This food gave the flesh a strong fishy flavor; hence it was not particularly sought after, save by the few who were partial to that class of diet. The duck centers of Long Island and New England were then producing a limited number each season, and it was with difficulty that these were sold with any profit. In fact, one of the most prominent duck raisers may be quoted as saying that he was obliged to visit the city markets personally and tease the dealers to purchase his birds, in order to secure anything like satisfactory prices.

Artificial incubation and brooding, combined with judicious feeding, have been instrumental in the development of the industry. Machinery has enabled the duck raiser to accomplish his ambition of having his stock in the markets when prices are the best, and also of raising large numbers of birds in a limited space of time. The season for raising ducks is about six months—from February to July. The methods employed by the most successful raisers will be given in this bulletin, and the most approved buildings, appliances, feeding, and care will be treated in detail.

Duck raising is to be recommended to farmers as a profitable source of revenue; and by careful attention to the work, as knowledge increases, the scope of the industry may be extended. There are numbers of farms in this country to-day that are devoted exclusively to raising ducks, averaging from 5,000 to 20,000 ducks as an annual output. An idea of the proportions of the business may be had from the fact that as high as three tons of feed are used daily by a single raiser during the busy season. The profits are the very best, and good incomes may be made when once the business is thoroughly mastered. But the reader should not jump imprudently to the conclusion that these results can be easily obtained. Duck raising is an arduous task; one that requires an apprenticeship and absolute knowledge of the business before success is reached. Those who have been successful in raising ducks have learned the business much as one does any other vocation. The beginner should start modestly, and increase his plant as his knowledge of the work increases. The average farmer has all the facilities for raising a goodly number of ducks, and may with a little outlay add considerably to his income.

It is not at all necessary that ducks should have access to water to be raised successfully; they grow and thrive as readily without. There are successful plants where thousands of ducks are raised that have no water, save that which is given them as drink. It has been a matter of much dispute which is the better way. Some duck raisers use

water and allow their breeders the freedom of it; some allow their growing stock intended for market free access to water until they are eight weeks old, when they are penned and fattened for market. On the other hand, there are raisers who have no water on their farms, excepting wells, who are just as successful and raise as many birds as those who have the water. The only noticeable difference between "upland" and "water" ducks is that the latter are of prettier and cleaner plumage than the former.

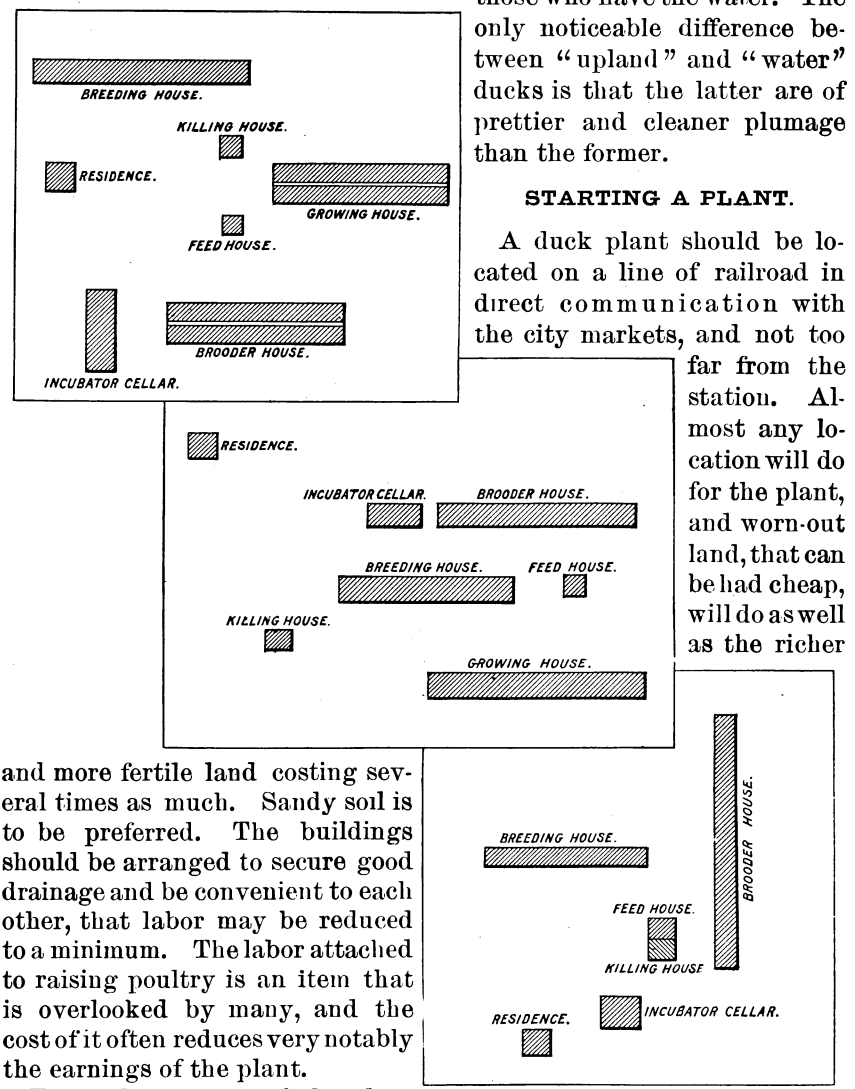

FIG 9.—Plans for a duck plant.

STARTING A PLANT.

A duck plant should be located on a line of railroad in direct communication with the city markets, and not too far from the station. Almost any location will do for the plant, and worn-out land, that can be had cheap, will do as well as the richer and more fertile land costing several times as much. Sandy soil is to be preferred. The buildings should be arranged to secure good drainage and be convenient to each other, that labor may be reduced to a minimum. The labor attached to raising poultry is an item that is overlooked by many, and the cost of it often reduces very notably the earnings of the plant.

Every department of the plant should be so located as to economize the time of the attendants. The incubator cellar should be convenient to the brooder house, the brooder house to the growing house and pens, and these to the killing house. The feed house should be located conveniently to the brooder and growing houses and the breeding pens.

The task of feeding the growing stock four times a day and the breeding stock twice a day is no small one. Watering is also to be thought about.

The exact arrangement of a plant suited to all locations can not be given, as each locality differs from others in some respect, and what may be suitable for one will hardly do for the other. The plans of no two of the largest plants are alike. They differ in location of the buildings to suit the lay of the land; but they all have the same general idea of the convenience of each building to the others. Illustration of this will be seen in fig. 9. When laying out a plant, make provisions for future enlargement; allow plenty of room on all sides to extend the buildings without rendering inconvenient the work that will be necessary to attend to the additional stock.

BUILDINGS FOR BREEDING DUCKS.

Houses for ducks are simple affairs. They are built plain and comfortable, and have no furnishings whatever. A duck is differently constituted from a hen, and must be cared for under different conditions. The hen needs warmer houses and drier surroundings than does the duck. A duck does not mind the cold, if she can keep her feet warm; cold feet will affect a duck as a frozen comb does a hen, retarding laying and inducing ailments. The feathers of a duck are almost impenetrable and will withstand almost any degree of cold. Again, a duck can not stand the amount of confinement in a house that a hen can; she is more restless in disposition and is given to exercise in a greater degree than is a hen. Indigestion is not so prevalent with ducks as with chickens; the duck's ceaseless motion aids the digestive organs and keeps her generally in good health.

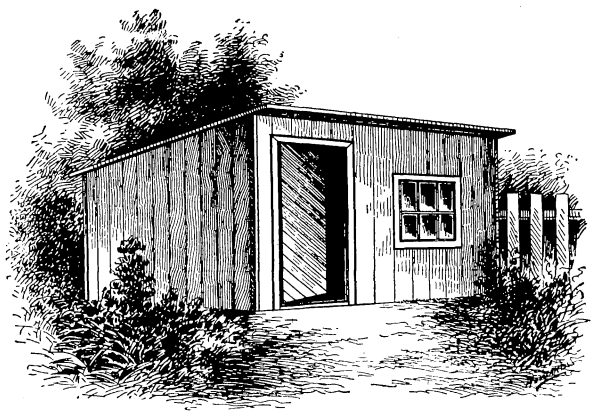

FIG. 10.—House for breeding ducks.

In fig. 10 is shown a simple house that may be built at small expense. It is plain and has a shed roof. Such a house should be built of rough boards, 12 inches by 1 inch, and joints covered by 3-inch by 1-inch strips. The roof should be made water-tight and covered with tarred paper, shingles, or tin. The outside should be well drained around the bottom, that it may not be damp. Some advocate board floors, raised from 6 to 8 inches from the ground and covered from 4 to 6 inches with

dry earth, straw, or leaves. The writer favors the using of board floors in all houses for chickens, but thinks it not essential for ducks. If the house is well drained on the outside and the earth floor is covered with hay, straw, or leaves, it will be perfectly satisfactory. There must not be dampness in the house, as the birds will not do so well; while they are given to water on the outside they must have comfortable quarters in which to "warm up," or "dry out."

The building shown in fig. 10 may be constructed of any dimensions desired, according to the size of flock to be kept. A house 12 by 14 feet will accommodate nicely a flock of a dozen. There are no interior arrangements whatever, simply the floor surface of the building. It is better not to use nests. Some raisers use a plain nest, as shown in fig. 11. These nests are made of 1-inch boards, 12 inches high and 16 inches long, set 14 inches apart, and held together in front with a 3-inch strip. The nests are nailed to the back of the house. But more than half the eggs are laid on the floor of the house or in the yard, and, if permitted, a duck will build herself a nest to her liking. Again, a duck is liable to injure herself by falling over the strips in front of nests or other obstructions that may be in the house. In fig. 12 is shown the nest of a wild duck.

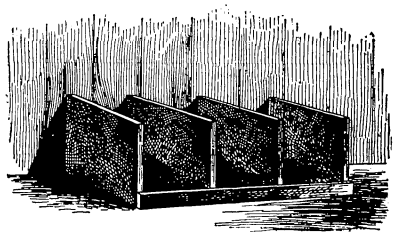

FIG. 11.—Nests for ducks.

When two or more breeding pens are to be kept, the plan of the house shown in fig. 10 may be extended to any length desired, as shown in fig. 13. In figs. 14 and 15 are shown two more designs of duck houses, which are practical and cheap, and may be built singly or in rows for a number of pens. Either of these houses, and also that shown in fig. 10, make excellent breeding houses for the farmer to keep ducks in.

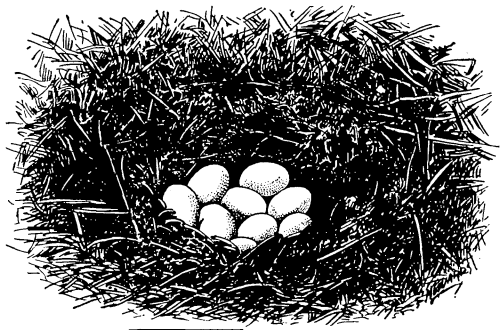

FIG. 12.—Nest of wild duck.

An inclosure should be given the breeding ducks, as they do better confined than when at liberty. Give plenty of room and inclose the run with 2-inch wire mesh 2 feet wide. If water is accessible, it should be inclosed by the mesh-wire fencing of the same width as for the run. In fig. 16 is shown a duck house with water runs, and also the arrangement of wire runs in the water. This is an admirable plan for farmers who have running water on their farms.

BROODING HOUSES.

The general construction of a brooder house is similar to that of the breeding house, and differs only in interior arrangements. The latter has no interior arrangements whatever, while the former has the system of heating and covers necessary for giving warmth to the young stock. In fig. 17 is shown a design of single-brooder house and ground plan that is generally used by duck raisers. This house should be built upon a good foundation and be entirely proof against rats. A good plan is to sink half-inch wire mesh about 2 feet in the ground and around the entire inside of the building; this will make it perfectly secure against rats and mice.

The accepted plan of a brooder house makes it 15 feet wide and as long as desired. The building is 4 feet high in front and 5 feet in rear.

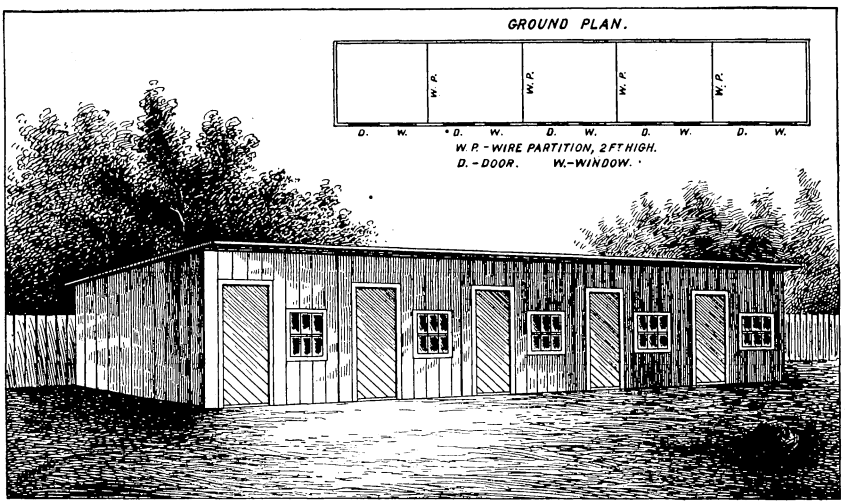

FIG. 13.—Plan and ground plan of five-pen breeding house for ducks.

It is divided into pens 12 feet long and 6 feet wide, and has a 3 foot passageway extending the entire length of the building. The ground plan (fig. 17) shows the general arrangement of the interior and location of the brooders.

The brooder box is next to the passageway, or walk, and runs the entire length of the building. This box is 30 inches wide and 8 inches high; the sides are 7 inches high and nailed securely; the top of the cover is nailed across with cleats to make it substantial, and the cover has an inch strip nailed underneath in front and back to keep it in position. These strips rest against the 7-inch sides and make the brooder snug and tight when closed. The heating pipes are directly beneath the cover and are 2-inch pipes, flow and return. Some prefer 1-inch pipes, using two flows and two returns. When three pipes are

used they should be about 8 inches apart from center to center. These pipes rest on the partition boards of the pens. The front of the brooder, leading into the pens, is cut out in the center about 4 inches deep and 4 feet long (fig. 18, *A*), while the ends and the other side are solid, being 7 inches high. The construction of the brooder is clearly shown in fig. 18, *B*, with cover removed, while fig. 18, *C*, shows cover. The heater is located at the end of building.

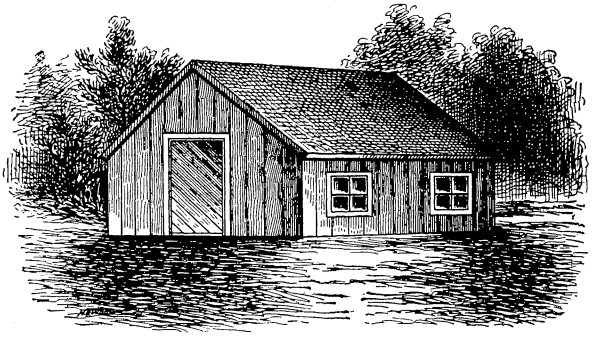

FIG. 14.—House for breeding ducks.

Another plan of brooder house is that shown in fig. 19. This house is known as a double brooder house, with walk in the center and pens on either side, and with heater at the end. Many prefer this plan to the single brooder house, as the care and attention required for the youngsters is much less and the cost of heating is reduced, one heater being sufficient for both lines of pipes. Then, again, this latter plan shortens the length of the building by one-half and makes the work more concentrated. The arrangement of the interior is the same as that of the single brooder house.

The plans of brooder houses, as given above, are for ducklings from the time they are taken from the machines until they are ready for the cold brooder, or growing house. The young ducklings, when taken from the nest or incubator, are very delicate and susceptible to the changes of the atmosphere; they must be kept very warm and free from chilling. The first three weeks of a duckling's life is the most critical period, and after that time the liabilities of loss are reduced to a very low rate—hardly five to the hundred. The front of brooders for young ducklings should be hung with strips of woolen cloth to keep in the warmth of the brooder. The greatest care should be given them at this period; the duck raisers really consider it the most

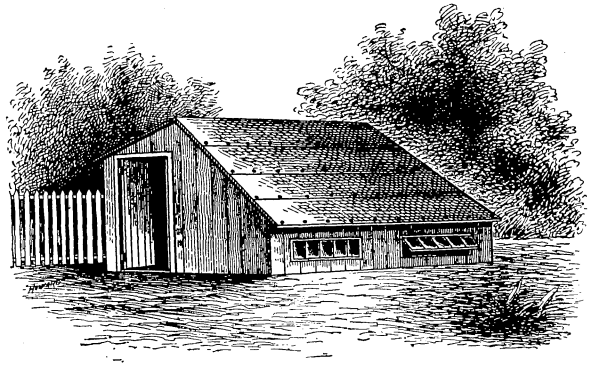

FIG. 15.—House for breeding and growing ducks.

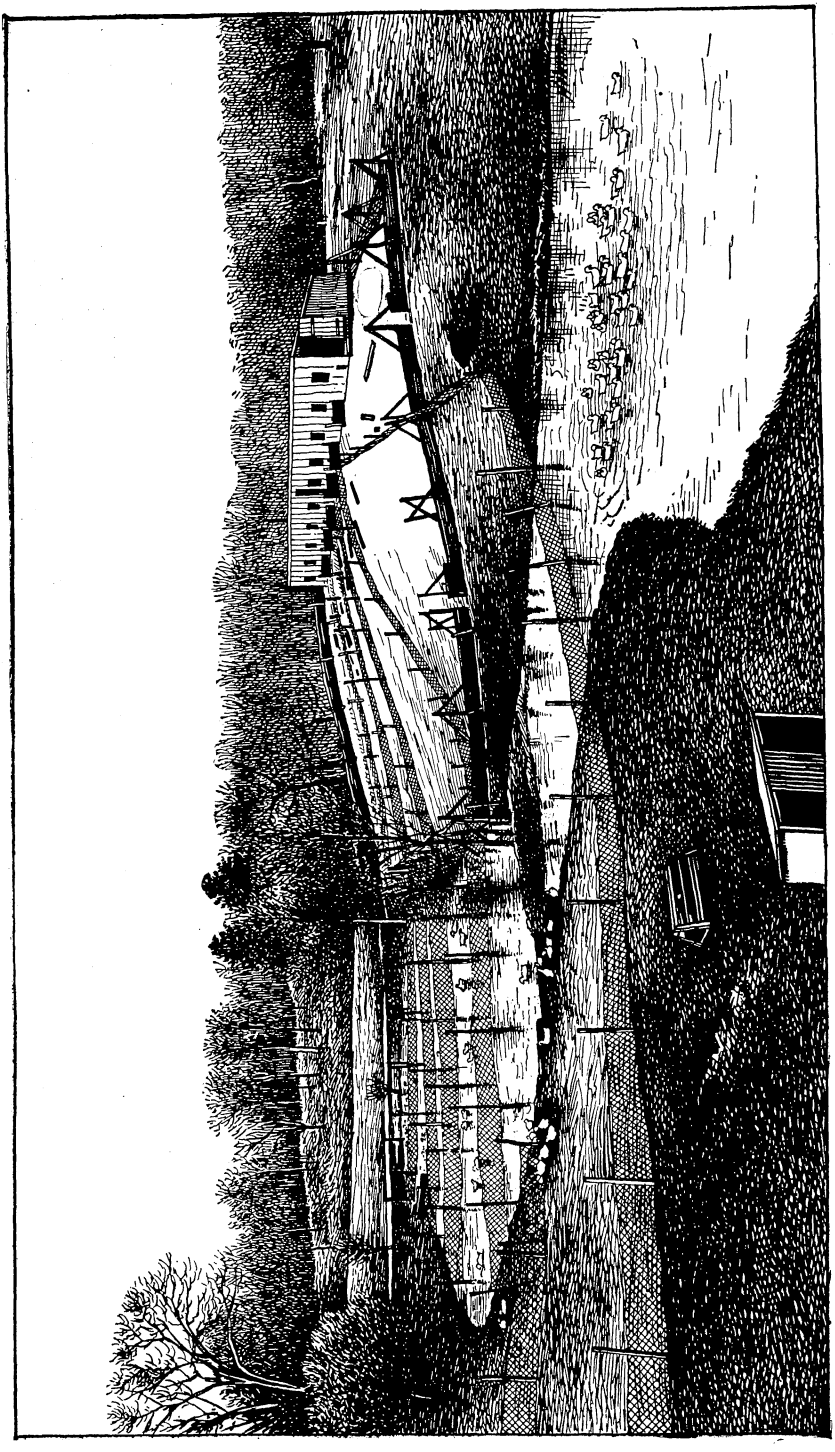

FIG. 16.—House for breeding ducks, showing water runs.

important part of their work, and after a bird has passed the "critical age" they may be counted on for the market.

Usually the care of the ducklings at this age is given to the women. They are more careful of the wants of the youngsters and attend to the detail work religiously. A case is known of a single attendant living, as it were, in the brooder house with the ducklings. She began her work with the morning feed at 6 a. m., and until sundown, when the night's meal was given, she was with her charges. The cleanliness of the brooder and pen was carefully attended to and everything was done to promote the health and comfort of the youngsters. At night they were all in their brooders and as snug as it was possible for them to be. A single neglect in the starting of a duckling will result in loss to the raisers. System is the key to the situation, and there should be no deviation from it whatever.

The duckling goes from the warm brooder house to the cold brooder

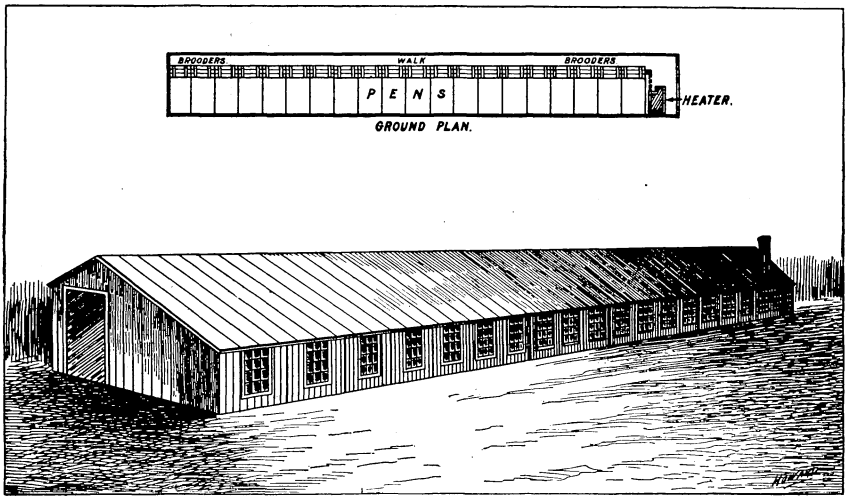

FIG. 17.—Single brooder house and ground plan.

house. The latter house is planned in a way similar to the former, with the exception of the 30-inch brooders. When the birds are taken from the warm brooder house they are three weeks old and of sufficient age to wlthstand a cooler temperature. They do not need the extra heat of the warm house, and in it would not grow nearly so well. The size of pens in the growing house is larger, and the ducklings are not crowded so many in a pen. If the birds are to be raised in colonies of one hundred each, the accommodations should be ample for them. It has never been proved to be good policy to crowd the growing stock; it retards their growth and encourages disease.

The cold brooder house should have a system of heating if birds are to be raised for an early market. The same system of pipes used in the warm brooders should be run around the sides of the building,

about 2 or 3 feet from the floor. This will give sufficient heat for the house and keep the birds comfortable. These pipes may be connected with the same heater used for running the warm brooder pipes. In the Northern States, in extremely cold weather, raisers also use the heating pipes in the warm brooder house in addition to the cold brooder pipes.

An excellent plan is shown in fig. 20 for the arrangement of the heater for connecting the pipes in the warm and cold double brooder house. It will be seen that the heater is placed in the center of the building; the warm brooder house is shown on the right and the cold brooder house with runs attached is shown on the left, and pipes, indicated by dotted lines, run in both directions. This is the most economical house to build and lessens the work in attending the stock. The room in the center of the building will be found very useful and is generally used as the feed room. The heater is in the cellar beneath this room. This plan is used by one of the largest and most successful raisers of ducks on Long Island, and it has his highest indorsement.

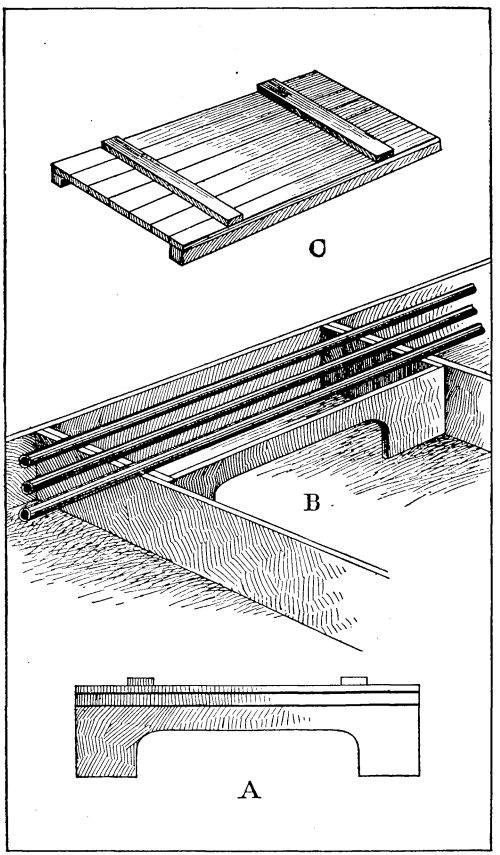

FIG. 18.—Plans of brooder.

The building may be of any size, the plan being as successfully carried out on a large scale as on a small one. If a small building is used at first, it may be enlarged on either end to suit the growing business, and extended upward of 100 feet in either direction, thus making the building more than 200 feet in length. The heater must be considered, when put in, with this object in view. A heater capable of heating the 200-foot house can easily be regulated to heat one of 50 feet, but a heater that will heat properly only a 50-foot or 100-foot house would be insufficient to heat the larger one.

Another difference between the cold brooder house and the warm brooder house is that the former has outside runs attached. These runs are used for feeding and watering when the weather permits, instead of

the feeding troughs inside the house. The ducks should be allowed the freedom of the outside runs as soon as the weather is suitable. Ducks like a life in the outer world, and they will grow more rapidly there than when they are confined to the house.

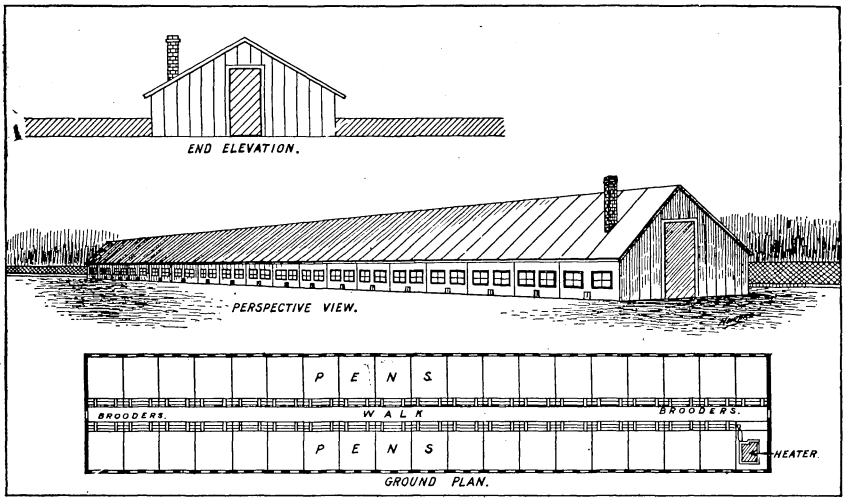

FIG. 19.—Plans of a double brooder house.

Ducklings are kept in the cold brooder house until they are six or seven weeks old, when they are transferred to large quarters known as growing houses. It is here that they are pushed for the market until

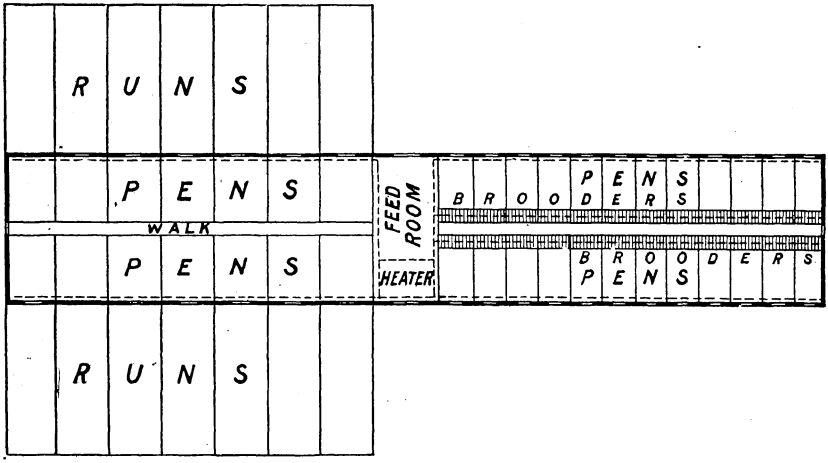

FIG. 20.—Plan of a double brooder house, showing arrangement of heating pipes.

they are 10 weeks old, when they are salable. There is no heat in the growing houses, which are used only as a means of shelter during the early spring months. When the weather is well advanced, the ducks

seldom take to the houses at night; they prefer the outside and spend their nights on the ground. The growing houses should be abundantly ventilated, as too close an atmosphere will do more harm in a single night than if they had not been housed at all.

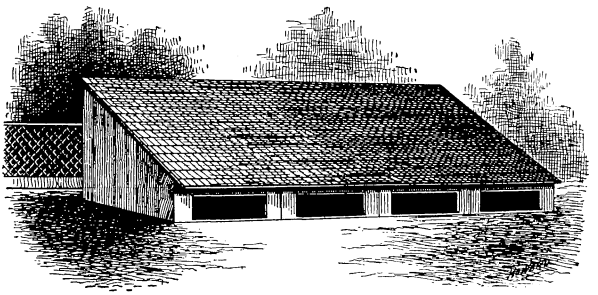

FIG. 21.—House for growing ducks.

A Pekin duck at 10 weeks is quite large, weighing close to 4 pounds. It is quite as large as a full-grown duck of some of the other breeds. In the space of two or three weeks from the time the ducklings are placed in the growing houses they will be marketed at the weight of 4 to 5½ pounds each. This weight is easily obtained, and when reached the profitable time to sell has arrived, as they then command the best prices. Often a bird kept after this time loses in weight and becomes unprofitable. The growing houses are built after the plan of the breeding houses, only much smaller. They need not be more than 4 or 5 feet high in rear and 1 or 2 feet high in front. Such a house is shown in fig. 21. This and other houses shown in figs. 22 and 23 may be built singly or in rows, with 12-inch boards separating the runs.

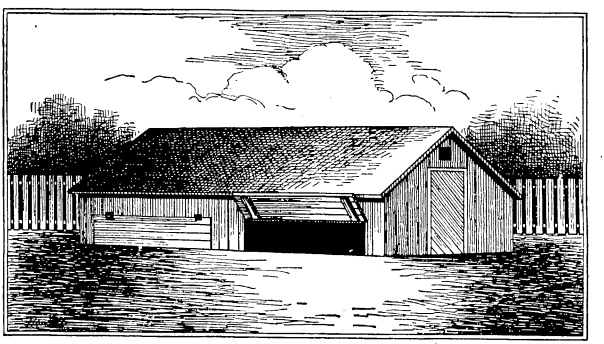

FIG. 22.—Two-pen house for growing ducks.

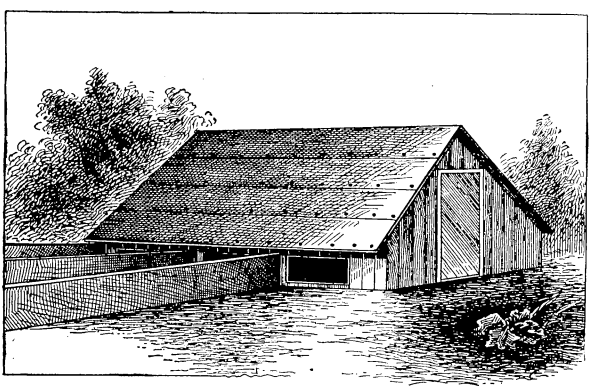

FIG. 23.—Three-pen house for growing ducks.

SUPPLYING WATER.

As has been previously stated, water for bathing is not at all necessary for growing ducks, but a liberal supply for drinking is absolutely essential to their growth. The food of the duck is such as to require drink when eating, as it is comparatively dry and can not be eaten hurriedly as grain is. When feeding, always replenish the water troughs or fountains with pure, fresh water. A duck when feeding will eat a small quantity and go to the water troughs for drink, repeating this performance several times during the meal. Conveniences for supplying drinking water to breeding and growing ducks are varied, and almost any contrivance will answer the purpose. When small numbers of ducks are kept, the simplest method of supplying water is in wooden troughs. These may be built V-shape or with square bottoms. They are shown in figs. 24 and 25.

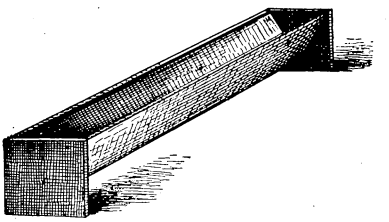

FIG. 24.—Gutter water trough.

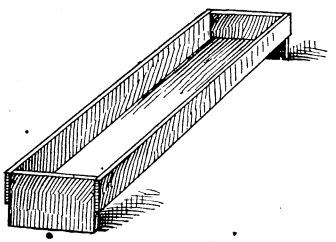

FIG. 25.—Flat water trough.

For smaller ducks, those kept in the warm brooder house, the fountain plan is to be preferred, as the youngsters can not get into the water and become wet or chilled. These fountains may be made of air-tight cans for the reservoir and a tin plate 2 inches larger in diameter than the can. A tomato can and an ordinary tin pie plate make an excellent fountain. Remove the top of the can and punch a small hole in the side about a quarter of an inch from the free top edge; fill the can with water and place it inverted on the plate. The water will run out until it reaches in the plate the level of the hole in the can. The plate will not overflow and water will be supplied automatically. Some raisers use a pan—a pie plate, for instance—and place a stone several inches smaller in diameter than the pan in the center, leaving a margin for water around the edge.

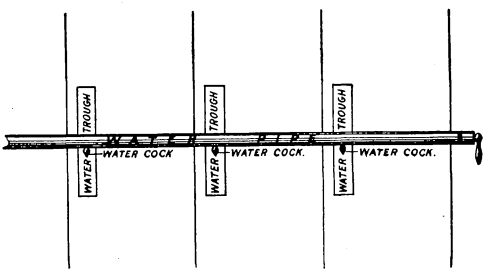

FIG. 26.—Plan for supplying water by pipes.

When large numbers of birds are kept, it is of course necessary that a system for watering be adopted for saving labor. A practical system in use is where the water is supplied by 1-inch pipes and having a cock in each pen directly over the water trough. Fig. 26

shows a diagram drawing of this plan. The flow of the cocks is regulated by having the one in the first pen run very slowly and gradually increasing the flow of the water in each pen. Thus all the troughs will be full at the same time. The pipe should rest on top of the fencing about 2 feet high which divides the runs. This plan of watering can also be used in brooder houses to good advantage.

FEEDING.

The food of the duck is both vegetable and animal in nature. In the wild state it gathers its food from brooks and marshes, consisting of flag, grasses, small fishes, water insects, etc. When the birds are raised in confinement this diet must, in a measure, be imitated to get the most satisfactory results. The duck has no crop, the food passing directly from the throat to the gizzard, and as a consequence the food must be in a soft mushy state. Too much hard food, such as grain, does not agree with these birds and they can not thrive on it. While some raisers use a small allowance of grain others do not, and it has not been proved to be of any advantage to feed it. Soft food is their natural diet, together with grasses, vegetables, and animal food. The proper selection of the food is extremely important to secure the rapid growth of the duck, and the ingredients of the food must be such as will afford a well-balanced and substantial ration. As a whole, it may be said that the rations used by the largest duck raisers are essentially the same, differing only in the quantities used in the mixing. Investigations show the real values of the food to be the same for producing rapid growth and early development. The duckling grows twice as rapidly and is a much heavier eater than the chick, and to produce the best results its food must be such as will be easily assimilated. The various methods of feeding given in this bulletin are recommended for raising ducks successfully.

It costs from 6 to 12 cents a pound to raise a duck for market at ten weeks of age. The cost of feed is from 4½ to 5 cents a pound, and that of labor, etc., is from 4 to 8 cents a pound. It costs from $1.75 to $2.50 each to keep breeding ducks a year.

The three different methods of feeding ducks are as follows: (1) Feeding ducks for market (ten weeks old); (2) feeding young ducks to be kept as breeders; (3) feeding old ducks. The first method, for the sake of convenience and to explain more fully the composition of the rations, is subdivided into four parts, as follows.

(1) From time of hatching to five days old provide the following mixture: Cracker or bread crumbs and corn meal, equal parts by measure; hard boiled eggs, 15 per cent of the total bulk of crackers and meal; sand, 5 per cent of the total of crackers and meal. Mix with water or milk, and feed four times a day.

(2) From five to twenty days old, the following mixture: Wheat bran, two parts by measure; corn meal, one part; rolled oats, 50 per cent of

this bulk; beef scraps, 5 per cent; sand, 5 per cent; green food, 10 per cent. Mix with water to a dry crumbly state and feed four times a day.

(3) From twenty to forty-two days old, the following mixture: Wheat bran, two parts by measure; corn meal, one part; beef scraps, 5 per cent of this bulk; sand, 5 per cent; green food, 10 per cent. Mix with water to a dry crumbly state and feed four times a day.

(4) From forty-two to seventy days old, the following mixture: Corn meal, two parts by measure; wheat bran, one part; beef scraps, 10 per cent of this bulk; coarse sand or grit, 5 per cent; green food, 10 per cent. Mix with water to a dry crumbly state and feed four times a day.

The hours for feeding are 6 a. m., 10 a. m., 2 p. m., and 6 p. m.

Below is given another system of feeding ducks for marketing at ten weeks of age. This system is practically the same as the one given above, differing only in the ingredients used for the first two parts or until the duckling is twenty days old. The method given below is used successfully by one of the largest duck raisers on Long Island. It is divided into three parts, as follows:

(1) From time of hatching to seven days old, feed equal parts by measure, corn meal, wheat bran, and No. 2 grade flour, and 10 per cent of this bulk coarse sand. Mix with water to a dry crumbly state and feed four times a day.

(2) From seven to fifty-six days old, feed equal parts by measure, corn meal, wheat bran, and No. 2 grade flour; 10 per cent of this bulk beef scraps; 10 per cent coarse sand, and 12½ per cent green foods (green rye, oats, clover, etc.). Mix with water to a dry crumbly state and feed four times a day.

(3) From fifty-six to seventy days old, feed two parts by measure, corn meal; one part wheat bran; one part No. 2 grade flour; 12½ per cent of this bulk beef scraps; 10 per cent coarse sand; 12½ per cent green food. Mix with water to a dry crumbly state and feed three times a day—morning, noon, and night. Give last feed an hour before sundown.

When ducks are raised for breeders they are fed differently from those intended for market. They are not forced so much as are the latter, and less fattening food is given them. The corn meal and beef scraps are reduced to one-half the quantity used in the above rations. The following is an excellent ration: Equal parts corn meal, wheat bran, green food, 5 per cent beef scraps, and 5 per cent coarse sand or grit.

A ration for breeding (laying) ducks is recommended as follows: Fifty per cent, by measure, corn meal; 15 per cent wheat bran; 15 per cent green foods (cooked vegetables, such as potatoes, turnips, etc.); 12 per cent beef scraps, and 8 per cent coarse sand or grit. Mix with water to a dry crumbly state and feed twice a day, morning and night. After

the breeding season is over and the ducks have stopped laying they are changed from this to the equal-parts ration, as given above for ducklings from seven to fifty-six days old.

MIXING FEED.

The feeding stuffs should be mixed in a trough sufficiently large to hold the quantity without wasting over the edges. First mix the corn meal and bran together while dry; after these have mixed thoroughly, making an evenly colored mixture, it should be moistened with water and mixed to a dry, crumbly state. It should not be too wet or sloppy, as it is then not so good for the fowls, neither can it be handled and fed properly. Warm water should be used when the weather is excessively cold. In a second trough place the green foods, such as cut rye, oats, etc., and dampen with water; then mix the allowance of the No. 2 grade flour with it. Thoroughly mix, so that the flour will completely cover the green stuff. After this has been done mix the flour and green mixture with the corn meal and bran mixture and add the allowance of beef scraps and sand. When vegetables are used, they should be well cooked before mixing in the rations.

The duck raisers on Long Island use large quantities of fish for their breeding stock. This is known as the "fish diet," and is considered as being very valuable to induce egg production. Where fish are cheap they form an excellent substitute for beef scraps in the rations for breeding ducks or ducks not intended for market, but under no circumstances should fish be fed to stock that will be marketed. Fish makes the flavor of the flesh strong and ducks fed on fish will not have ready sales in the market. The fish are cooked by boiling in iron camp kettles until well done, and then mixed, bones and all, in the rations as given above for breeding ducks. When fish is used the beef scraps are omitted.

HOW MUCH TO FEED.

The amount of feed needed each day for young ducks varies as much as does their growth. Their growth averages a half pound a week, and to make this increase of weight each week requires an additional quantity of food over the preceding one. The rule is, feed each meal what they will eat up clean with a relish, and do not allow them to linger over the feed trough. It is better they should have not enough than too much, as they will be in a much better condition to relish the next meal. One thing is considered to be of as much importance as the feed, and that is removing the feed left over and thoroughly cleaning the troughs after each meal. This is scrupulously attended to by successful duck raisers.

One raiser gives, as a generous allowance for one day's ration for one hundred laying ducks, the following: For the morning meal, 35 quarts of the mash, and for the evening meal 40 quarts, making a total

of 75 quarts for the day's portion, or three-fourths of a quart to each duck a day. Another raiser allows 400 quarts, fed in halves, twice a day, to six hundred breeding or laying ducks, averaging two-thirds of a quart to each duck a day.

There are many patterns of feed troughs in use, hardly any two being alike. They are simple affairs, the simpler the better, as they are more easily kept clean. The designs given for water troughs are equally as good for feed troughs and answer the purpose very well. Each pen of birds should have two troughs, one for water and the other for feed, built proportionately to suit the age and size of the birds they are intended for. Make them of sufficient length to avoid crowding, so that all the birds in each pen will have ample room to eat at the same time.

OYSTER SHELLS AND GRIT.

Grit in some form is essential to ducks and should be kept before them at all times. Many overlook this fact and do not seem to understand that it is of as much value to them as it is to chickens. The sand used in the mashes tends to supply a certain amount of grinding material or grit to them, but does not fully satisfy them for digesting their food. On a farm where more than ten thousand birds are raised annually, and where disease is practically unknown, it was noted that in every pen there was a box of grit and a box of crushed oyster shells. This raiser states that he considers grit and oyster shells an absolute necessity for ducks, and he attributes the healthy appearance of his stock to it. His birds eat it freely and the supply is never allowed to run out.

KILLING AND DRESSING FOR MARKET.

There are two methods of dressing ducks for market, by dry picking and by scalding. Both of these methods are good and are being successfully employed by the largest raisers. Some have a preference for dry picking and others for scalding, and it becomes only a matter of taste which method is used. When birds are dressed by scalding they should be dipped several times, or until the feathers come out easily. The back should be dipped in the water first. After scalding, wipe them as dry as possible with a sponge and pick the breast feathers first. A bird when dressed for market has left on it the feathers on the wing, the tail feathers, and the feathers on head and neck, as shown in fig. 27. The legs are left on, and the birds are not drawn.

The process of dry picking is considered the simpler of the two methods, and one who is accustomed to the work can readily dress 3 dozen birds in a day. The picker's outfit consists of a chair, a box for the feathers, and a couple of knives, one knife being dull and the other being sharp-pointed and double-edged, for bleeding. The bird is taken between the knees, the bill held open with the left hand, and a cut made across the roof of the mouth just below the eyes. The

bird is then stunned by striking its head against a post or some hard substance. The picker seats himself in the chair with the bird in his lap (fig. 28), its head held firmly between one knee and the box. The feathers are carefully sorted while picking; the pins are thrown away and the body feathers with the down are thrown into the box. Care should be taken about this, as the feathers from each bird will weigh about 2 ounces, and will quite pay for the picking.

The dull knife and the thumb are used to remove the long pinfeathers, and this should be done without tearing the skin. The down can usually be rubbed off by slightly moistening the hand and holding the skin tight. Often some of the pins can not be taken out without tearing and disfiguring the skin; when such is the case they should be shaved off. Seven or eight minutes is all the time necessary to dress a bird. After the birds are picked they should be carefully washed, and plumped by placing in a tank or barrel of ice water. They are hardened in this ice water and given a rounded and full appearance. They are then packed in barrels or boxes and shipped to market. The first or bottom layer is packed with backs down; a layer of ice is then placed over them, and all other layers are packed with the breasts down, a layer of ice being between each layer of ducks. The top of the box or barrel is then rounded off with ice and covered with burlaps. A flour barrel will hold about three dozen birds. Some raisers use boxes for shipping and have the empties returned free.

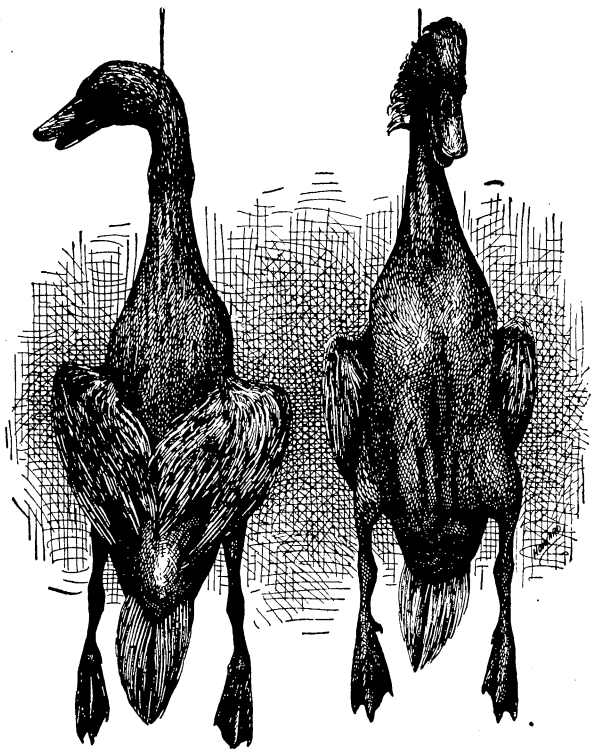

FIG. 27.—Pair dressed ducks (10 weeks old).

DEVELOPMENT OF THE DUCKLING IN THE EGG.

Eggs to hatch must have good, strong germs and must be laid by healthy stock. Debilitated, degenerated stock will not produce healthy and vigorous young. The health of the breeding stock must be pro-

moted and everything done that will assist to increase the fertility of the egg. Comfortable houses, cleanliness, pure water, and above all wholesome and nutritious food, are the best promoters of health. The best stock to be had is none too good, and it is erroneous to send the earliest and best stock to market for the small increase in price, and save the later and inferior stock for breeding purposes. A continuation of this practice for a few years means degenerate stock, infertile eggs, weak germs, and large mortality among the newly-hatched birds.

After an egg has been under incubation for thirty-six hours, it will, if fertile, when held to the light, show a small dark spot a trifle larger than a pin's head. This little spot is the life germ and shows the egg to be fertile. From this time the development of the germ into the duckling can be plainly seen if the egg be held to a strong light. On the sixth or seventh day the first testing of the eggs should be made and all infertile ones taken out. The germ is very distinct at this time, and there has been a gradual change going on in the interior of the egg. The little spot has been constantly enlarging and becoming more dense, and little veins are seen running in divers directions. This is the appearance of an egg with a strong, live germ, which under favorable circumstances will produce a duck.

FIG. 28.—Duck picker.

An egg that is not fertile on the sixth or seventh day will be perfectly clear and transparent; all such should be removed at once, as it is useless to allow them to remain. Another kind of egg often seen is a weak or imperfectly fertilized egg, and shows an irregularly-shaped blood vessel, which had started but lacked vitality enough to continue. Such an egg will not hatch and should also be removed from the nest or incubator. Frequently the germ in an egg will show life when tested on the seventh day, but lacks the vitality to carry it through, and when tested later will show dark, irregular blotches over the surface of the egg. These will not hatch, and should be taken out when noticed.

On the fourteenth day the little creature inside the egg begins to assume shape and show considerable life. It has increased many times in size since it was seen on the seventh day; the red veins have become more numerous and have spread over the entire surface, while the yolk is scarcely distinguishable from the other portions. The pupil of the eye has now become distinct, and the projection of the wings is clearly

perceived. The absorption of the yolk has also commenced, and this will continue until the twenty-fourth day, when it will be nearly completed. The egg from this time on will rapidly grow opaque, and at the eighteenth or twentieth day is entirely so. On the twenty-fourth day the duckling is ready to make its way out of the shell, and in forty-eight hours after pipping the shell it will be entirely out.

NATURAL INCUBATION.

Hatching under the sitting hen (generally used for hatching ducks) is what is termed the natural process of incubation. The hatching of eggs by this means has always been followed, and no special skill is needed for success, provided the eggs are well fertilized with healthy germs. Many who raise ducks in large numbers, however, use almost exclusively artificial means; some use both the natural and the artificial, while others use the natural entirely.

Of the natural method we shall treat first: Hens of medium size of the American class, barred Plymouth Rocks and Wyandottes, are considered the best for sitting. Nine duck eggs are about the right number to place under a hen in early spring weather, but when the season is far advanced as many as thirteen are used. The hens should be provided with large, roomy nests, and slatted fronts that can be removed and replaced easily when the hens are fed and watered. The nesting material should be of hay or straw, and the nest should be slightly concaved; in the bottom place a little finely cut hay.

Before the hen is put on the eggs she should be thoroughly dusted with insecticides; the nest also should have a good dusting of the same. Both hen and nest should undergo a thorough dusting several times during the process of hatching as a safeguard against lice. When the ducklings are hatched they should also have their share of the insecticides before they are given to the hen. When a large number of sitting hens are used for hatching, as many as possible should be set at one time, and the ducklings raised in brooders. Hatching with hens may de done on a large scale and the young brooded artificially. As many as five hundred sitting hens are used on some farms for hatching ducks. They are set in small houses or rooms with the nests around the sides in tiers, each nest having its own lattice door. Each day, in the morning, the hens are taken from their nests and fed and watered on the floor of the room. They are taken down in limited numbers, sections, as it were, at a time, and after they have had the food, drink, and a little exercise they are placed back on the nests and another section is fed and watered.

ARTIFICIAL INCUBATION.

The subject of artificial incubation has engaged the attention of the civilized world for generations past; the method has done wonders for the poultry industry and has opened up the pathways to fortunes that might otherwise never have been made. The science of incubation and brooding has been developed wonderfully in this country during the last quarter of a century, and what seemed almost an impossibility then has indeed become a certainty now. There are many thousands of

chicks and ducklings hatched by artificial means each year, and the numbers of good machines now being manufactured in this country at low prices make poultry raising a business that almost anyone with a limited capital may profitably engage in. The mission of an incubator is to supplant the sitting hen, and make it possible to hatch a large number of chicks at a minimum amount of cost and labor. That this can be done is proved each day.

For artificial incubation, have a room with a temperature as nearly uniform as possible. Balance the heat in the machines, or in other words, see that the heat is uniform at both ends, and, in fact, all over them. See that each is running steadily before placing the eggs in it, as there is a great deal in starting right. The machines should be run at a temperature of 102° for the first three weeks, and 103° the last week. The eggs should be turned twice each day at regular periods. Introduce a pan of water from the fifteenth to the twenty-second day, no matter what the location of the machine, whether in a damp cellar or in a dry room overhead, in a moist atmosphere near the seashore or in a dry one at an altitude in the country. The temperature may go as high as 104° just previous to and while hatching without injury. Place the glass on a live egg after the animal heat rises, which will be when the circulation begins. This will be perceptible in good eggs the fourteenth and fifteenth days.

Considerable weight has been put upon the ventilation question in incubators by manufacturers and operators, but it has been found that when the egg chamber is roomy, and the eggs are taken out and cooled twice each day, it is not of so much consequence. There is no doubt but that there must be some ventilation in the egg chamber, but from the experience and observation of the writer the value of the subject has been overestimated by many. Some machines have top ventilation, some bottom, and others both top and bottom, and there is seemingly no marked difference in the hatching.

When the ducklings are hatching, the broken egg shells should be removed once in every six or eight hours, so that they will not slip over the pipped eggs, as it would be sure death to the imprisoned ones. Occasionally a little bird is unable to free itself from the shell and needs help; the expert can readily detect when this is necessary. The one point to note in this connection is this: The egg just before hatching radiates a great deal of heat, while the duckling, when first out, being not unlike a little sponge, absorbs it, or in other words, the rapid evaporation which takes place generates cold; so that when the ducklings are out the machine should be gauged one degree higher.

When the ducklings are all out and dried off, the machine will run at least two degrees lower than when they were in the egg. Plenty of ventilation is needed in the machines while hatching. Keep the ducklings in the machine at least twenty-four hours after hatching, when they will be strong enough to be removed to the brooder. The heat in the brooder should be started twenty-four hours previous to use, so that it will be perfectly heated and ready for the ducklings when they are taken from the machine.

GEESE.

STANDARD BREEDS OF GEESE.

Introduction.—There are seven standard breeds of geese, as follows: Gray Toulouse, White Embden, Gray African, Brown Chinese, White Chinese, Gray Wild, and Colored Egyptian.

GRAY TOULOUSE GEESE.

History.—Gray Toulouse geese (fig. 29) are named for the city in France of that name, where they are extensively bred. In this country

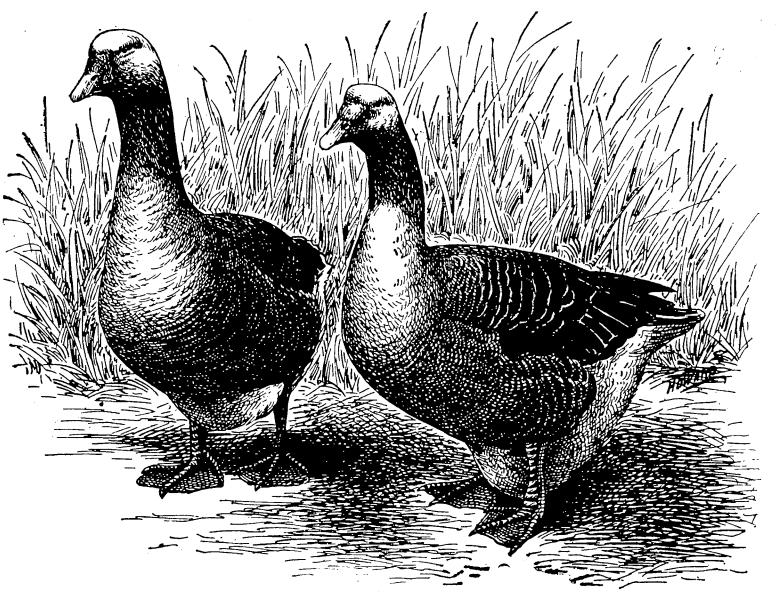

FIG. 29.—Pair of Gray Toulouse geese.

they are bred in large numbers by farmers and are fairly well thought of for market purposes. Their flesh is a trifle too coarse and flabby, when compared with some other geese, to be prized very highly for table purposes. They are termed a Christmas goose, as being later in maturing than the others they are just about right at the holiday time. They are fairly good layers, averaging about 40 eggs in a season.

Description.—Toulouse geese are more compact in shape than other geese, and are preferred by many for this reason. The head is rather large and short, and they have a comparatively short bill that is stout at the base; the neck is carried well up and is of medium length. They have a broad back of moderate length, which curves slightly from the neck to the tail; their breasts are broad and deep. The body of the Toulouse goose is moderate in length, broad, and very deep and compact, the more compact the better; and in birds in good condition the belly almost touches the ground. Their wings are large, strong, and fold nicely against the sides, and they have comparatively short tails, and stout thighs and shanks. In color of plumage they are a dull gray, without penciling. The head is dark gray and the neck of the same color, which shades to a lighter gray as it approaches the back; the back is of dark gray, while the breast is light gray. The body plumage is light gray, which grows lighter and becomes white on the belly; the white extends back to and around the tail, covering the fluffy parts. The primaries of the wings are dark gray or brown; the secondaries are a shade darker than the primaries and the coverts are dark gray. The tail feathers are gray and white, the ends tipped with white. Their eyes are dark brown or hazel in color; their bills, shanks, toes, and webs are of deep reddish-orange color.

Weight.—The standard weight of the adult gander is 20 pounds; adult goose, 20 pounds; young gander, 18 pounds, and young goose, 15 pounds.

WHITE EMBDEN GEESE.

History.—White Embden geese (fig. 30) are considered very practical birds for farmers, and pay well for their keeping. They are nice looking, of large size, tall and erect carriage, and snow-white plumage. They originally came from Embden, in Westphalia, and have been bred in this country for many years.

Description.—The Embdens are not so prolific as the Brown Chinese or Toulouse, 20 eggs in a season being a good average for them. Their eggs are very large, white, and have a very thick, rough shell. In carriage they are very tall and erect, and have fine square bodies. They have rather large heads, medium-sized bill, and a long neck that is carried upright. Their backs are of medium length, and arch slightly from the neck to the tail; the breast is round and full, and the body is large, square, and very deep, and, like the Toulouse, almost touches the ground. The wings are large and strong; tail short; thighs and shanks short and stout. Their eyes are bright blue; bills flesh color; and their shanks, toes, and webs are deep orange.

Weight.—The standard weight of the adult gander is 20 pounds; adult goose, 18 pounds; young gander, 18 pounds, and young goose 16 pounds.

GRAY AFRICAN GEESE.

History.—Gray African geese (fig. 31) are by many raisers considered the most profitable of all geese to keep. They grow the heaviest in the shortest space of time, and are ready for market in ten weeks, weighing at that age between 8 and 10 pounds. They are very much like the Pekin duck in this respect, and as compared with other geese give the most satisfactory returns for the least labor and time spent in growing them. They are, according to standard weights, as heavy as the Toulouse and Embden, but specimens are not uncommon that exceed

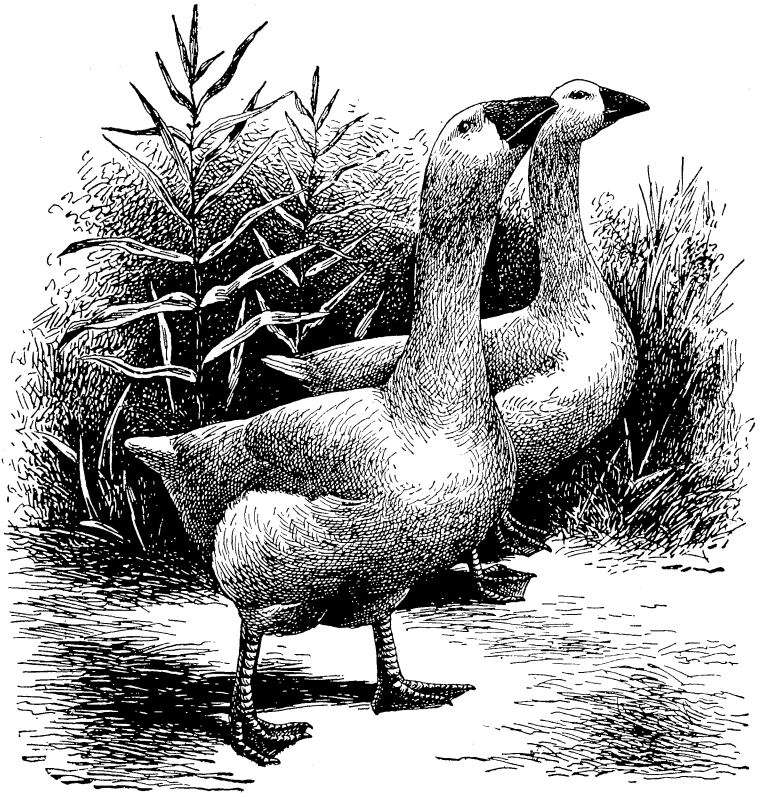

FIG. 30.—Pair of White Embden geese.

these weights by several pounds. They are first-class layers and average about 40 eggs in a season. This is considered as a low estimate for their egg production. For table purposes they are esteemed very highly, their flesh being fine and nicely flavored.

Description.—These geese have a large head, with a large knob, and a heavy dewlap under the throat. These and the Chinese geese are different from the others in the head, and are the only two breeds that have the knob on the head. The bill of the African is rather large and stout at the base, and their necks are long. Their backs are long

and flat, breasts round and moderately full, and they have large, long, and upright bodies. The wings are large and strong, and are folded well against the body; the thighs are short and stout, and shanks of medium length. The knob is black and the dewlap of a gray color, while the plumage of the neck is light gray with a dark stripe running from the head to the body. The back is dark gray, the plumage of the breast is gray, and the underpart of body is light gray. The wings and tail are dark gray, and the thighs are light gray. The eyes are hazel or brown; bill, black; shanks, toes, and web are of dark-orange color.

Weight.—The standard weight of the adult gander is 20 pounds;

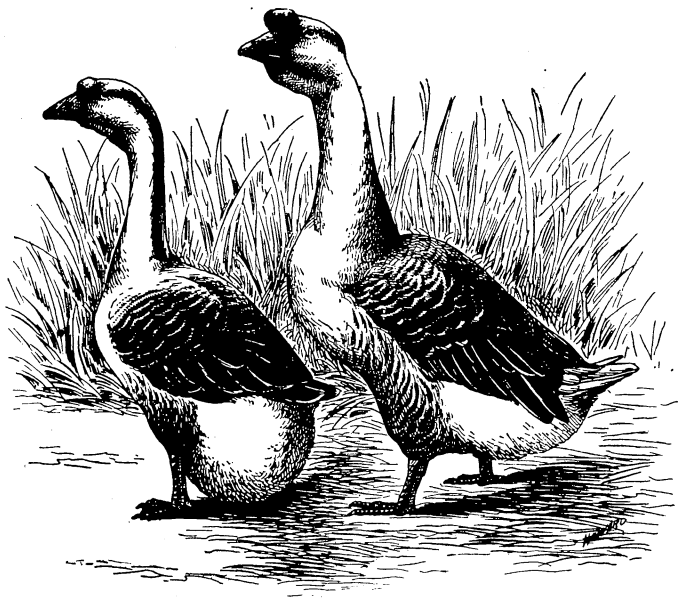

FIG. 31.—Pair of Gray African geese.

adult goose, 18 pounds; young gander, 16 pounds, and young goose, 14 pounds.

BROWN AND WHITE CHINESE GEESE.

History.—The smallest of the breeds of geese are the Chinese, averaging in weight from 6 to 7 pounds lighter than those previously named. Apparently their want of size has prevented them from becoming favorites with those who raise large numbers annually, but with those who keep a limited number they are found to be very practical. What they lack in size they gain in egg production, being the most prolific of all breeds of geese, averaging from 50 to 60 eggs a year. In size, aptitude to fatten, and ease of management they appear in no respect inferior to other geese, while the quality of flesh is decidedly superior.

Description.—They are exceedingly graceful in appearance, quite hardy, and the young mature early. There are two varieties of Chinese geese—the Brown (fig. 32) and the White. They have large heads, with large knob at base of a medium-length bill, and long, gracefully arched necks. The backs are medium in length, and the breast is round and full; body of medium size, round and plump; wings, large and strong; thighs, short and stout, and shanks of medium length.

The color of head of the Brown Chinese geese is brown; knob dark brown or black; neck light brown or grayish brown, with a dark stripe

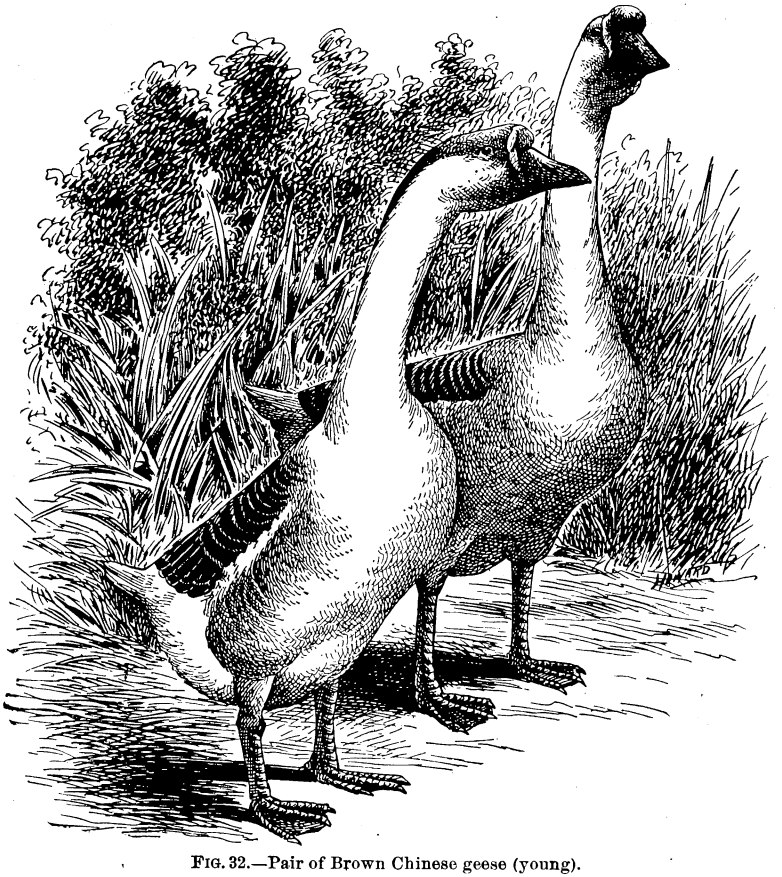

FIG. 32.—Pair of Brown Chinese geese (young).

from the head down to the body. The body is dark brown, breast grayish brown, and the under parts are a shade lighter in color. The wings and tail are brown, and the thighs are grayish brown. The eyes are hazel or brown; bill dark brown or black; and shanks, toes, and webs are a dusky orange color.

The color of plumage of the White Chinese geese is pure white throughout, perfectly free from feathers of any other color. The knob and bill are orange color, as are also the shanks, toes, and web. The eyes are a deep leaden blue.

Weight.—The standard weight of the adult gander is 14 pounds; adult goose, 12 pounds; young gander, 10 pounds, and young goose, 8 pounds.

GRAY WILD GEESE.

History.—Gray Wild geese (fig. 33) are among the best known of domestic geese, and are very generally bred throughout the entire country. They are among the most valuable and practical birds for goose raising, and are prized very highly for table purposes, besides being good layers, hardy, and easy to rear.

Description.—These geese have a rather small head, small bill, sharp at the point, and long, slender neck, snaky in appearance. The back is long and rather narrow, and is arched from neck to tail; breast, full and deep, and body long and somewhat slender. The wings are long, large, and powerful, and the thighs are rather short. The head of the Wild goose is black, with a white stripe nearly covering the side of the face; bill, black; neck, black; and back, dark gray. The breast is light gray, which grows darker as it approaches the legs; the plumage of the underparts of the body from the legs to the tail is white. The wings are dark gray; primaries dusky black, showing only a dark-gray color when the wing is folded; secondaries are brown, but of a lighter shade than the primaries. The tail feathers are glossy black, and the thighs are gray. The shanks, toes, and webs are black. The eyes are black.

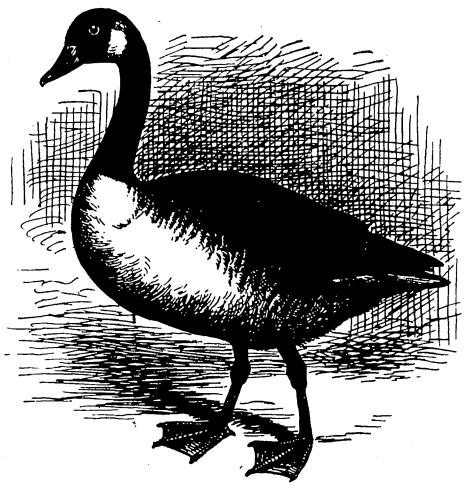

FIG. 33.—Gray wild goose.

Weight.—The standard weight of the adult gander is 16 pounds; adult goose, 14 pounds; young gander, 12 pounds, and young goose, 10 pounds.

COLORED EGYPTIAN GEESE.

History.—The most beautiful of the breeds of geese are the colored Egyptians (fig. 34); they are purely ornamental, not having been bred in this country for any other purpose than the showroom. They are sometimes called the Nile Goose. This goose is tall and somewhat slender, which gives it an elegance of appearance not possessed by any other breed. It can generally be bred in confinement, but is of a most quarrelsome nature, and the male will fight to the death other males of the same species. The males must each be given a separate pen, and mated with the females; it is seldom that any two males can be kept in the same pen.

Description.—These geese have a medium-sized and rather long head, a bill of medium length, and a rather small neck. The back is narrow and slightly arched from the neck to the tail; breast, round; body, long, but somewhat small and slender. Their wings are large, and have instead of the ordinary hard knobs horny spurs about five-eighths of an inch long; the thighs are of medium length, and the shanks rather long. The color of the head is black and gray; the bill is purple or bluish red, and the eyes orange.

The neck and back are gray and black; the center of the breast is chestnut, and the balance is gray. The upper parts of the plumage of the body are gray and black, and the under parts are a pale yellow, penciled with black. The shoulders of the wings are white, with a narrow black stripe or bar. The tail feathers are glossy black; thighs, pale buff; shanks, toes, and webs, reddish yellow. The eyes are orange.

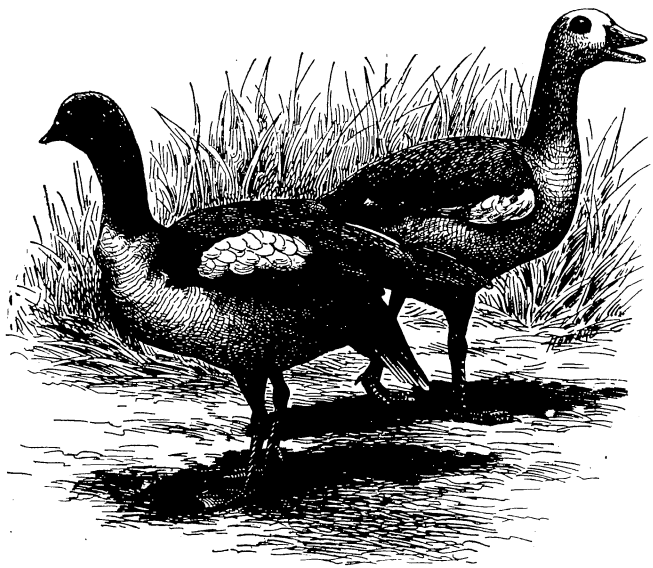

FIG. 34.—Pair of Colored Egyptian geese.

Weight.—The standard weight of the adult gander is 15 pounds; adult goose, 12 pounds; young gander, 12 pounds, and young goose, 9 pounds.

MANAGEMENT OF GEESE.

Goose raising is not so extensively engaged in as duck raising, the conditions under which they can be successfully raised being almost entirely different from those necessary for successful duck raising. The duck, being smaller, can be raised in a more limited space than can the goose, the latter needing free range and water, while the former has been proved to do equally as well without water.

While the goose can not profitably be raised in as large numbers as the duck, still it can not justly be termed unprofitable. There are many places on a farm that are worthless for cultivation that could be utilized with excellent results for goose raising. Fields that have streams, branches, or unused springs on them could be turned to good advantage by making them into goose pastures. Many farmers are

profiting by this and adding to their incomes annually. The care and attention necessary for raising geese are very small when compared with the returns, and the cost of food is also proportionately small in comparison with the cost of food used for other birds bred for market. A goose on range will gather the largest portion of its food, consisting of grasses, insects, and other animal and vegetable matter to be found in the fields and brooks.

The simplest kinds of houses are used for shelter; these should be built after the plans of those given for ducks, but should be proportionately of larger size to accommodate comfortably the number of birds to be kept. Geese are long-lived birds, some having been known to attain the age of 40 years, while birds of 15 and 20 years of age are not uncommon. They retain their laying and hatching qualities through life. Ganders should not be kept for breeding after 3 years of age; young ganders are more active and insure greater fertility of the eggs than old ones do; besides, ganders become more quarrelsome as age advances.

The feathers of geese are an important source of revenue and find a ready sale in the markets. A goose will average about 1 pound of feathers a year. The feathers should be plucked when there is no blood in the ends of the quills; this can be readily ascertained, as they will then leave the flesh without hard pulling. Almost all breeds of geese are good sitters and attentive mothers, and if left to themselves will make their nests, much as when wild, and hatch a large percentage of their eggs. But hens are now more frequently used for hatching goose eggs; as by taking the eggs from the goose when laid and giving them to hens to hatch, the goose will lay a greater number of eggs than if she were permitted to sit.

All breeds of geese, except perhaps the Egyptian, are to be recommended to farmers who keep a limited number in addition to other poultry and allow them the freedom of the farm, but when goose raising is to be more extensively engaged in, the African goose is to be especially commended. It is the quickest to mature, most prolific, and the easiest to handle of any of the varieties.

MATING AND SETTING.

In breeding African geese, mate two geese to one gander, and it will be still better if pairs are used to secure better fertility of the eggs. Those who contemplate raising geese should secure their stock in the fall, so that the birds may become accustomed to the place before the breeding season begins. The breeding stock should be at least 2 years old, and fully matured birds. When stock is purchased in the fall they should be turned out in a pasture, and no other food than what they gather themselves will be needed until the grass goes down. Their rations should then consist of equal parts by measure, bran, middlings, and corn meal, with 5 per cent of this bulk of beef scraps.

They should be given a light feed of this ration in the morning, and at night they should be fed cracked corn. Ten per cent of the bulk of the daily ration should be green foods, steamed clover, and cooked vegetables.

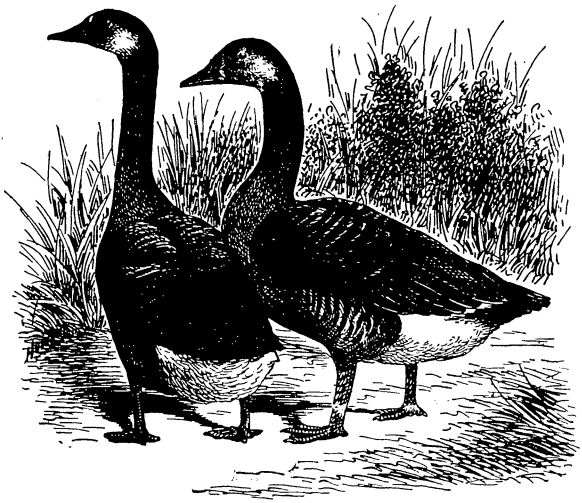

FIG. 35.—Wild and African cross.

The breeding season begins about February 1, though some geese will begin laying as early as December, then stop, and begin again the first of February. They make their own nests from the straw and litter on the floor of their houses, and will lay from 12 to 20 eggs before becoming broody. As soon as the goose shows an inclination to sit, remove her and place her in a dark box or small coop, and keep her there for two or three days with water for drink, but no food. Then she may be placed back in the yards and she will begin another laying of eggs. The first and second layings of eggs should be set under hens. After the goose lays the second laying she should be confined again, when she will lay a third laying. When she has laid the third laying she should be permitted to sit on them, instead of giving them to hens. A goose will lay from 10 to 15 eggs in each of the second and third layings.

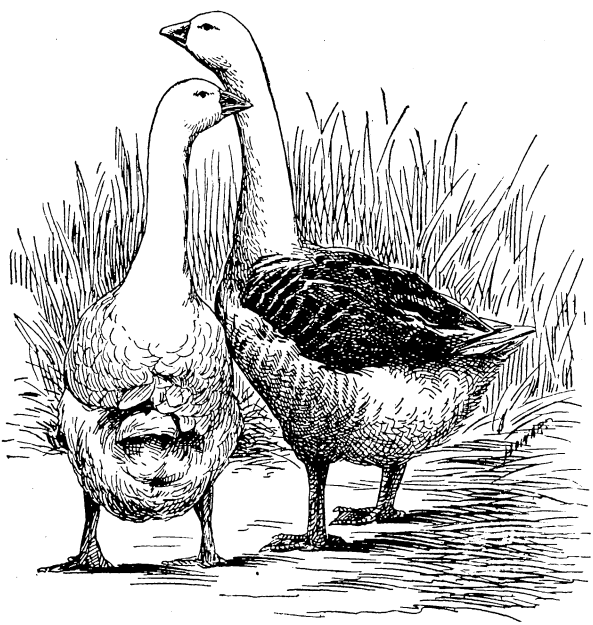

FIG. 36.—Embden and Toulouse cross.

It is recommended that after the eggs have been sat upon for twenty-five days, that they be taken from the nest and placed for about one minute in water heated to a temperature of 104°. Thirty days are required for incubation. After the eggs have hatched leave the hen and goslings in the nest for twenty-four hours; after the young have become thoroughly dry remove hen and brood and pen them in a large, roomy coop for four or five days. When the goslings have reached this age—four or five days—they are perfectly able to take care of themselves. The hen should then be taken from the goslings, which should be allowed freedom to roam at will, but they should always be cooped up at night.

FEEDING AND DRESSING FOR MARKET.

The first feed for goslings is grass, fed on sod; a small allowance of corn meal, slightly moistened, is also given them. Sand and charcoal are sometimes mixed with the corn meal. They are fed on the above food three times a day for a couple of days, when they are given a ration composed of equal parts by measure, bran, middlings, and steamed cut clover or cooked vegetables. This feed is given them morning, noon, and night, until they are 8 weeks old, when they are penned to be fattened for market at 10 weeks old.

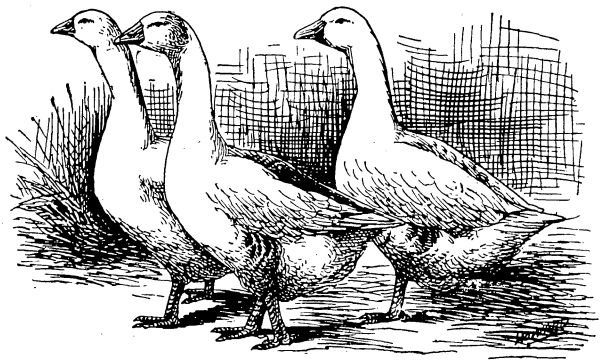

FIG. 37.—Embden and African cross.

To fatten young geese, place them in a pen, not too large, so that they will not exercise too much, and feed three times a day all they will eat up clean of the following: Corn meal mixed to a dry crumbly state, and beef scraps amounting to 20 per cent of the bulk of the corn meal. While fattening young geese they should be kept as quiet as possible; no excitement whatever should disturb them. When feeding approach them quietly, and do not irritate them in the least or they will not fatten, but will "throw out" or grow another crop of feathers. At 10 weeks of age, or when the tips of the wings reach the tail, they are ready for market and should weigh between 8 and 10 pounds.

When young goslings are to be dressed for market they are killed by cutting them in the roof of the mouth, severing the artery, or by stunning them by hitting them a sharp, quick blow on the head. The picker uses a box in front of him about the height of the knees, holding the bird with the left hand and clasping the feet and wings together; he places the head of the bird against the box and holds it in place

with the knee. Pick the feathers from the body of the bird, then dampen the right hand and brush the body to remove the down. Leave about 2 inches of feathers on the neck, and also leave feathers on the wings at the first joint. Lay the wings against the body of the birds and tie a string around to hold in position. Place the birds, when picked, in cold water for an hour or so to plump them; if they are in the water too long they are liable to bleach and become water-soaked. They are then iced up in barrels already to ship to market.

Young geese should be marketed in October. It is best to market all possible before cold weather sets in. It is much harder to dress a gosling in cold weather. The feathers set tighter, and in picking them the flesh is torn.

CROSS BREEDING.

The most satisfactory results are to be had by breeding pure standard-bred stock without crossing. But to those who are partial to crosses the following are considered the best to make: (1) Wild gander on African goose (fig. 35); (2) Embden gander on Toulouse goose (fig. 36); (3) Embden gander on African goose (fig. 37), and (4) Embden gander on White China goose. These crosses will give good growth and the young birds will dress well for market. Crosses should only be made for market purposes, and should always be bred from original stock.

FARMERS' BULLETINS.

These bulletins are sent free of charge to any address upon application to the Secretary of Agriculture, Washington, D. C. Only the following are available:

No. 15.—Some Destructive Potato Diseases: What They Are and How to Prevent Them. No. 16.—Leguminous Plants for Green Manuring and for Feeding. No. 18.—Forage Plants for the South. No. 19.—Important Insecticides: Directions for their Preparation and Use. No. 21.—Barnyard Manure. No. 22.—Feeding Farm Animals. No. 23.—Foods: Nutritive Value and Cost. No. 24.—Hog Cholera and Swine Plague. No. 25.—Peanuts: Culture and Uses. No. 26.—Sweet Potatoes: Culture and Uses. No. 27.—Flax for Seed and Fiber. No. 28.—Weeds: and How to Kill Them. No. 29.—Souring of Milk and Other Changes in Milk Products. No. 30.—Grape Diseases on the Pacific Coast. No. 31.—Alfalfa, or Lucern. No. 32.—Silos and Silage. No. 33.—Peach Growing for Market. No. 34.—Meats: Composition and Cooking. No. 35.—Potato Culture. No. 36.—Cotton Seed and Its Products. No. 37.—Kafir Corn: Characteristics, Culture, and Uses. No. 38.—Spraying for Fruit Diseases. No. 39.—Onion Culture. No. 40.—Farm Drainage. No. 41.—Fowls: Care and Feeding. No. 42.—Facts About Milk. No. 43.—Sewage Disposal on the Farm. No. 44.—Commercial Fertilizers. No. 45.—Some Insects Injurious to Stored Grain. No. 46.—Irrigation in Humid Climates. No. 47.—Insects Affecting the Cotton Plant. No. 48.—The Manuring of Cotton. No. 49.—Sheep Feeding. No. 50.—Sorghum as a Forage Crop. No. 51.—Standard Varieties of Chickens. No. 52.—The Sugar Beet. No. 53.—How to Grow Mushrooms. No. 54.—Some Common Birds in Their Relation to Agriculture. No. 55.—The Dairy Herd: Its Formation and Management. No. 56.—Experiment Station Work—I. No. 57.—Butter Making on the Farm. No. 58.—The Soy Bean as a Forage Crop. No. 59.—Bee Keeping. No. 60.—Methods of Curing Tobacco. No. 61.—Asparagus Culture. No. 62.—Marketing Farm Produce. No. 63.—Care of Milk on the Farm. No. 64.—Ducks and Geese. No. 65.—Experiment Station Work—II. No. 66.—Meadows and Pastures. No. 67.—Forestry for Farmers. No. 68.—The Black Rot of the Cabbage. No. 69.—Experiment Station Work—III. No. 70.—The Principal Insect Enemies of the Grape. No. 71.—Some Essentials of Beef Production. No. 72.—Cattle Ranges of the Southwest. No. 73.—Experiment Station Work—IV. No. 74.—Milk as Food. No. 75.—The Grain Smuts. No. 76.—Tomato Growing. No. 77.—The Liming of Soils. No. 78.—Experiment Station Work—V. No. 79.—Experiment Station Work—VI. No. 80.—The Peach Twig-borer—an Important Enemy of Stone Fruits. No. 81.—Corn Culture in the South. No. 82.—The Culture of Tobacco. No. 83.—Tobacco Soils. No. 84.—Experiment Station Work—VII. No. 85.—Fish as Food. No. 86.—Thirty Poisonous Plants. No. 87.—Experiment Station Work—VIII. No. 88.—Alkali Lands. No. 89.—Cowpeas.

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